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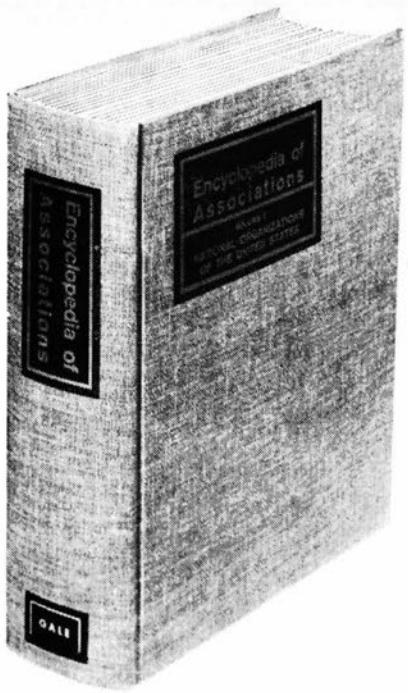

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Some Questions

One of the proposals of the Activities Committee on New Directions for ALA (ACONDA) offers the possibility that the Association might become "a federation of organizations with specialized interests" under the umbrella of ALA offices responsible for general concerns and centralized services. In substance it is a proposal which has appeared in earlier Activities Committee reports, but ACONDA presents it in conjunction with another for a functional organization in which present divisional specializations might be supplanted.

ACRL has strongly endorsed the federation plan, saying that:

> Academic libraries, as well as other types of libraries, are institutions having a configuration of problems which make them unique institutions in terms of priorities, personnel, and professional aims. Failure to recognize this principle and gear the reorganization of ALA to respond to this particular set of requirements would produce general mediocrity throughout the work of the Association.

Perhaps fortunately the plan is identified as a long-range option, and ACONDA recommends "extensive study by staff and membership to develop creative schemes for restructure of the Association."

Creative schemes are needed, certainly, to make the Association effective, on the one hand, and representative on the other.

John Lorenz wrote to ACONDA (Final Report, p. 82):

> ALA has become a large organization. In the process it has become too unwieldy, expensive and, in many cases fruitless to have hundreds of committees and hundreds of meetings, the principal or only result of which is membership involvement or communication. These are no longer sufficient justification. The Executive Board and the Divisions should be seriously asked to reexamine the need for all committees and consider the alternative, where necessary or desirable, of having a responsible individual (possibly a member of an existing board) to be responsible for action and/or communication as needed in particular areas of concern.

Could ACRL, as a semiautonomous association, continue to contribute to the general welfare of the profession as well as to the advancement of academic librarianship?

Can ACRL set an example for the other federated associations in

reducing the size and complexity of ALA in the manner which Mr. Lorenz suggests? Three current measures of the magnitude of this problem, of course, are the thousand meetings of the annual conference, the increase in dues, and the decrease in membership. Only a third of the librarians in the U.S. belong to their national professional society.

Can ACRL find means for controlling the proliferation of sections, committees, and subcommittees with overlapping interests? Can ACRL control the Standing Committee Syndrome, which rewards the assiduous committeeman with brownie points, travel money, and selective friendship for finding means of keeping a good thing going?

The recent decline in membership confirms the need for New Directions, and federation, on the face of it, would be less of an innovation than would be the alternative scheme of functional organization. Nevertheless ACRL has contributed substantially over the years to the membership—and the leadership—of ALA, and it can be expected to continue this role in solving ALA's urgent and perplexing organizational problems.

DAVID W. HERON

ALLEN B. VEANER

Major Decision Points in Library Automation

This article is based on a longer, more detailed paper prepared for the 1970 Midwinter Meeting of the Association of Research Libraries. Readers interested in the complete text (with bibliography) are referred to the Minutes *of the ARL meeting. The author discusses automation in the context of the management, facilities, and system requirements for large research libraries.*

Introduction

The main subject of this paper is change. Fundamental changes accompany the automation of library functions. Whether one employs batch operations, on-line techniques, or a mixture of the two, it constitutes a totally new way of life. When applied to a large central library, automation creates the most radical changes in library operations since the creation of libraries. This paper will not deal with single-application, small-scale automation efforts, nor with those in branch or special libraries. Rather it is addressed to the factors and decision points in developing a major program of automation in the main research facility of a large university or research organization.

The early questions in deciding upon an automation program are concerned with the implications of radical change. What is the status of the current manual system? Is the time right for a change? What are the known or anticipated effects of major change upon the staff? Upon the faculty and students? What are the financial implications? Answers to these questions must be as detailed as possible and must be based on realistic expectations concerning the functions which are currently susceptible to automation.

What kinds of library activity can be automated in the present state of the art? Although much research and experimentation has been conducted on advanced systems of information storage and retrieval, it is clear that there is nothing yet on the horizon to rival the human brain and natural language for intellectual tasks of great complexity. Man is still the principal thinking creature, the one who can handle ill-structured problems and heuristic inquiry. But in the library he remains heavily burdened with routine tasks, or what is more accurately called *formalizable* work. We have enough experience to know that the activity currently susceptible to change through automation is this formalizable, housekeeping work. Hence the candidates for automation are of two kinds: repetitive tasks and those jobs which are deterministic and highly structured. They must involve relatively few intellectual decisions or decisions which are both repetitive and of a compara-

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tively lower order. "Is this number bigger, equal to, or smaller than that one?" "Is this date earlier or later than another?" Formalizable activities are also the hardest to change because habit and custom govern their performance. Thus, immediately upon embarking on a study of automation, one enters a political thicket; at issue are performance norms, standardization, organizational structure and reporting patterns, job analysis, time and motion studies, reassignments, retraining, and the upsetting of all former social and occupational stability. In summary, the question is: How well is an organization prepared for change? Is it willing to employ staff whose mission is challenge, evaluation, and program change?

The methodology of introducing change has itself changed radically. Gone are the days of changing procedures by administrative memo or unilateral fiat. Intra-institutional competition for funds has become public knowledge and is forcing the revelation of administrative and economic realities which might previously have remained behind the scenes.

Ideally, a new system of doing anything should sell itself because those directly affected by the change have already fully participated in its development. This makes good sense because no level of staff will be unaffected by an automation program. Nevertheless, much work remains to alleviate the prevalent anxiety of job loss or takeover by machines. Jacques Barzun stated not long ago that "mechanical work is the computer's meat; as a source of *intelligence* it is a total loss."[1] In comparing the human brain and the computer, Orlicky points out:

> When we discover areas of mental work in which we can outperform computers, we tend to regard computers as sluggish or clumsy, but perhaps a more proper way of looking at it would be to realize that the particular task is extremely difficult and that our own ability in this respect is outstandingly high.[2]

Experiences of the past five years reveal how remotely far we are from any miraculous software which will overnight transform our research libraries into "knowledge banks" capable of giving the right "answer" to any query, no matter how ineptly articulated.

A basic assumption is that we have a finite amount of human and cash resources. A further assumption is that people-costs are rising much faster than unit machine-costs, while the productivity of people in the library has hardly increased at all. A striking illustration of increased employee productivity in industry is documented in a recent *Fortune* article on the Toyota Motor Company of Japan.[3] Here is how productivity of Japanese automotive employees changed in twenty years:

1949: 1.5 cars/year/employee
1965: 20 cars/year/employee
1968: 28 cars/year/employee

We can demonstrate no such productivity increases in libraries; in fact, the opposite is likely to occur. As long as total productivity is a linear function of the number of employees, more staff and more supervisors will always be needed to control the ever-growing intake of publications and the spreading demand for library services. Correspondingly, the more costly a resource of declining productivity, the greater the net cost of a given output. Unit processing costs in the library must inevitably increase unless aided by machine processes. This fact and the universality of computers as a general purpose tool are the main force behind Dolby's contention that the computerization of cataloging is not only desirable but inevitable.[4]

The administrator considering an automation program faces two problems: (1) How does he allocate his limited resources? and (2) What can he do to in-

crease the productivity of his employees? Neither question can be answered without intimate knowledge of the present way of doing things.

Understanding the Present System

A prior requirement for any automation activity is a thoroughgoing, comprehensive analysis of systems and procedures currently in force. It is essential that analysis be carried out without any preconceptions or prejudices for or against automation. The determination of unit costs and unit times, as well as peak loads, are among the most needed data for making any kind of management decision on the desirability or feasibility of making changes. It may be discovered that change is neither desirable nor economical in certain areas. The conduct of a detailed analysis and evaluation is in itself a major task which in a large library can easily consume five to ten man-years.

A systems effort is a continuing activity, not something done once under the assumption that facts once obtained remain stable and fixed. Systems analysis is also a full-time activity; it is impossible for any staff person charged with operations to conduct systems analysis. What should be the ratio of systems analysts to employees? If there are two support staff for each professional, it is probably reasonable to have one full-time analyst for each fifty persons on the technical processing staff, inclusive of file-oriented functions, such as circulation. However, this is merely suggestive, not prescriptive.

Ideally, an analyst is a librarian, though excellent results can be obtained from a nonlibrarian if he meets the selection criteria described herein.

Extra-Library Assistance

The task of systems analysis and design cannot be delegated to any group of outside "experts." The users play the crucial role in both analysis and design. Technical people bring their own prejudices and a very imperfect knowledge of the mission and procedures of a given organization. In both business enterprise and in libraries, what *can* be delegated is programming and the technical methodology of implementing a system after management has decided *what* to do. Still, such contracted work will require constant monitoring by the systems analyst/designer and librarian to assure design integrity. A team approach dominated by a high regard for the quality of interpersonal relations is essential to success.

Where will the managerial talent come from to run an in-house development effort? If a library "grows its own," the orientation and educational task will be minimized. If one must go to the outside, how will he merge bibliographic and computing talent in the same person?

Suppose a library decides to delegate part or all of the technical (i.e., programming) task to an agency outside of the library. In this case, "outside the library" can just as well mean another agency on campus. A favorable political climate is a prerequisite to the success of this method. Affiliation with a local research project in information retrieval or with a scientific computing center is attractive, because there is a vast reservoir of intellectual talent—the scarcest resource in any automation task. However, such alliances can be biased equally by research interests on the one hand and implementation interests on the other. The intellectual challenges behind tough software problems are the stuff of life for the best people—the only people you really want working on hard problems. In trying to find the most efficient logical solutions, a programmer can easily be deflected from development aspects. A mutually challenging set of tasks should be determined which appeals to both sets of interests. To satisfy these conflicting

motivations takes a project manager with unusual catholicity of perspective.

Personnel Characteristics, Selection and Salaries

When one decides to mount an in-house automation effort, how does he get help with staffing? Judging the talent and performance capability of software people is not within our normal expertise. Even the experts have their troubles. Unless the librarian has learned a great deal about computing—possibly even learning some programming himself—he cannot reliably evaluate a candidate for systems analyst or programmer. You may recall that the ACLS report, *On Research Libraries,* closely parallels Orlicky's advice for businessmen, namely, that there is no alternative to the librarian's learning the computer art:

> Some programming experts must be brought into libraries but, more important, librarians must learn to use computers and must come to understand their strengths and limitations. This education process will take several years under the best conditions. From experience in other fields we can emphasize that there is no alternative to *library experts learning computation.* Any other course will lead to inferior results with great waste of money and effort.[5]

We have no contraindications to this advice. Librarians responsible for systems efforts must learn programming. We will nevertheless continue to depend upon knowledgeable people on campus, such as the staff of the scientific computation center or the administrative data processing center. Such assistance will be valuable, however, only in proportion to the degree to which the librarian is capable of making his goals understandable to these outsiders. About one man-year should be allotted for training and orienting each nonlibrarian sufficiently to ensure that the systems librarian can be confident that the details of a bibliographic application will be well understood.

It is common to divide systems development staff into at least three categories: systems programmers, applications programmers, and systems analyst/designers. Systems programmers work with and write the programs that offer to the applications programmers certain essential machine facilities, such as terminal access, special compilers, and languages for writing applications programs. The applications programmer writes the programs which actually execute user defined tasks, such as printing catalog cards from MARC tapes, creating overdue notices, issuing purchase orders, and the like. The analyst/designer is the person who gets right out with the users of the system and learns thoroughly their work. These categories of people are very different from each other; in most cases, it is not at all practicable to think about using them interchangeably.

Because he interacts directly with the user, the analyst/designer can make or break an application of automation. The analyst must be personable, patient, and respectful of the librarian's expertise. It is wise to be on guard against any candidate who appears abrasive, "smart alecky," likely to intimidate, or who feels that he already knows or can learn with little effort all that there is to be known about an application.

Programmers are different. Some are gregarious and sociable, others are loners. Most will prefer to work with the intellectual challenge of the application as described by an analyst rather than work directly with the user. Experienced programmers and users hardly ever speak the same language and can often misunderstand each other when they do get together. The qualified systems analyst knows enough about both worlds to be an effective go-between.

Systems development is expensive. A yardstick from industry indicates that it costs about $35,000 to support a systems programmer for one year. Suppose that he is paid $15,000; this might come to

some $2,000 per month inclusive of overhead, to which is added his requirements for machine test time. Machine time for testing might cost up to $1,500 per month, though he won't spend that much every month. His rate of expenditure will vary in accordance with task complexity and his own accuracy and efficiency, and, of course, in accordance with the pricing algorithm of the given installation. For library system development, I can cite one example. To develop the program for converting an incoming MARC tape to Stanford's local, internal processing format cost $8,000 in man and machine resources, inclusive of overhead. These are development costs, not operating expenses. The estimation of machine costs requires explicit information on specific program steps, machine configuration and pricing algorithms, the amount of execution time and utilization of other machine resources, the type of data being processed, and the general system complexity. An experienced cost accountant is really needed to interpret and break out the components of computer costs.

The salaries commanded by high quality analysts and programmers will come as no surprise. What may come as a shock is that one may have to pay more than one's own salary to recruit the right talent—this is particularly the case for large-scale applications which involve a degree of sophistication beyond normal batch processing. The larger the institution, the higher must these salaries be, because bigger organizations inevitably have more highly sophisticated computer services, which in turn require and attract higher-priced people. Sometimes one hears the complaint that there is a "shortage" of qualified computer people when what one really means is that someone does not wish to pay the salaries necessary to attract the desired people, or some institutional or legal constraint does not permit making the right offer.

Forecasting Whether and What to Automate

A thorough analysis of current systems should provide the administrator with information on the flow of material and data, the allocation of personnel, the organization, content, and use of files, and a complete inventory of forms. He will also obtain a profile of unit costs for various tasks within each library function of each subsystem. Working together with the systems analyst, the programmer, the staff of the computation center, and the policy makers of the university, the librarian should be able to identify not only the high unit-cost items and high total-cost items in this profile, but also those which are technically feasible for and readily susceptible to automation. There is no simple formula to define "readily susceptible to automation." This will be a function of the unique combination of machine and people resources present at a given institution and the director's own priorities based upon his program. It may be that some of the high unit-cost items cannot be aided by automation in the present state of the art; similarly, there could be a number of low-cost functions which occur in sufficient quantity to justify computer applications. For example, there is little doubt that circulation is one of the most profitable areas for exploration in any modern computer environment. But, at this time, the computer is likely to be of little immediate, economical aid to any intellectual task, e.g., original cataloging. A good text editing system, though, can simplify and speed the clerical aspects of copy preparation and card production.

There are three major, practical reasons for undertaking the automation of library functions: (1) to do something less expensively, more accurately, or more rapidly, (2) *to do something which can no longer* be done effectively in the manual system because of increased complexity or overwhelming volume of op-

erations, and (3) to perform some function which cannot now be performed in the manual system—providing always that the administrator actually wants to perform the new service, has the resources to pay for it, and is not endangering the performance of existing services for which there is an established demand.

In this connection, the mere capability of performing a given function by computer is not a sufficient reason for doing it. The technician is likely to believe "If we can do it, we should." The industrialist will assert "If we can make a profit, we should do it." The director of the library must decide whether that is the thing he really wishes to do in terms of his program, his budget, and his clientele.

With regard to the difficulties of library automation, an encouraging attitudinal shift is now evident. From a "trivial" problem, library automation has emerged as *the* intellectual challenge, rivaling information retrieval. There is, of course, always a substantial distance between the availability of a device and its actual application. Oettinger has outlined carefully the long, arduous struggles between conception of a device or technique, the building and testing of prototypes, and their emergence into production. In discussing the properties of educational devices, he cites the following factors to be considered in applying innovative resources: flexibility, generality, parallelism of access and simplicity of scheduling, quantity available, physical accessibility, reliability, ease of maintenance, degree of complexity, comfort for the user, and standardization. He also demolishes the idea (so glibly promoted by hardware salesmen) that possession of a device is synonymous with change of habit.[6]

Leaving aside practicality for a moment, a fourth justification for library automation activity is research—to learn whether certain new functions can be carried out with computer assistance, and if so, how to do them. The library community should neither abrogate nor delegate its research responsibilities. However, it is advantageous to integrate a variety of talents in complex computer applications. The stimulus of the nonlibrarian working together with librarians can aid in making sure that we do not suffer from "tunnel vision" and try merely to apply the new technology in the context of present limitations. These dangers are well delineated in SDC's report, *Technology and Libraries.*[7]

Facilities: Choice, Priority, Time

Ideally, the library ought to have under its own direct control all the necessary resources for complete system development. This is hardly ever achievable. The larger and the more complex the institution, the more likely is its computer facility to be complex and centralized.

Library use of computers suffers from two major handicaps: low priority for machine use and insufficient machine time. One way of dealing with these problems is to buy a significant interest in the machine. Another is for a number of neighboring institutions to form a consortium or processing center, or to utilize commercial services. Where the work load of a single library may not suffice to interest a computer facility, combined purchasing power may carry more weight. Still another method for overcoming problems of priority and time relies on prior, local political settlements, but in the end this method may not be the most efficacious. A problem-oriented solution is always better, and a great deal of work needs doing on the formulation of appropriate problem-oriented strategies for gaining computer support in library automation.

Libraries consume vast amounts of storage, use a lot of machine resources for input and output, such as keyboard-

ing purchase orders or collecting circulation transactions, printing catalog cards, and the like. Except for very complex software tasks, most library applications involve very little actual computing. They tend to be "input/output bound" rather than "processing bound," hence are much more closely allied to the operations of an administrative data processing center than to a scientific computing center. However, it would be misleading to suggest that this mere similarity in itself will be productive if much experimentation is involved. Oettinger points out:

> As many computer centers of all kinds have found out to their despair, routine scheduled administrative work and unpredictable experimental work coexist only very uneasily at best, and quite often to the serious detriment of both. Where the demands of administrative data processing and education require the same facilities at precisely the same time, the argument is invariably won by whoever pays the bills. Finances permitting, the loser sets up an independent installation.[8]

Turning to the scientific center, we see that its mission is to supply fast turnaround service to the research community. Its management generally does not look favorably upon file-oriented applications, because the machine overhead necessary to manage these functions detracts from the center's ability to service its clientele. Indeed, if there is any sophistication whatever in the scientific system, the number of competing users rises faster than the capacity of the system to meet demand, and this will certainly affect adversely any application not within that center's mission.

Dedicated or Shared Hardware

Dedicated hardware involves high fixed-costs of equipment and personnel; shared hardware involves high variable-costs for services performed, but if proper contracts have been negotiated, the user has some control over the kind and amount of services he purchases. A convenient feature of dedicated hardware is that the organization is beholden to no one—save the computer manufacturer, the telephone company, and the electric power company. But only one's own applications can be run on the machine and questions of priority and sufficiency of time do not exist; in fact, one may have time to sell. The type of machine one can have all to oneself will probably be a stripped-down model with a limited repertoire of software "smarts," and accommodating few peripheral devices.

A crew is needed to run the dedicated machine: operators to mount tapes, feed in decks of cards, and tear off and distribute printouts; systems programmers to maintain local software and keep the manufacturer's software and documentation up-to-date; and an administrator to schedule utilization and maintenance. It is also handy to have an external work load for idle time to help pay the rent. Also required will be backup arrangements so that operations can function on another facility during planned or unplanned downtime.

There are two very powerful arguments for not having one's own small computer:

1. First, a small taste of things one can do inevitably gives one an appetite for more sophisticated applications. The capability of the small machine is soon exhausted; changing to a larger computer may require a change in the operating system or programming language, either of which could require a lot of reprogramming.

2. The second reason is that small machines and small installations do not attract the intellectual talent needed to assure the most efficient use of machine resources. The better people naturally gravitate to the more sophisticated installations.

An alternative is to associate with a larger facility to take advantage of peripheral storage, special output devices

(such as terminals), and the scarce resource-talent. Because very little calculational computing is done in library applications, it may be possible to satisfy a local need with a "mini-computer" if the small machine can be used as a terminal for the central facility. But this kind of interconnection or networking is a substantial software task in itself.

Assuming that it is better to pay for service from a computation center, what kind of facility should be used? The differing job characteristics in scientific and administrative applications have already been mentioned. Administrative data processing is oriented towards "fixed field" applications, whereas library usage involves variable length records with many special graphic characters. Administrative applications are further characterized by large work loads which often require two or three shifts; their timing schedules are critical owing to payroll and tax calculations and the month-end loads imposed by the task of preparing budget statements for thousands of cost centers. Also, an administrative data processing center is generally about one software generation behind a scientific center, and its systems programs may not be as efficient. However, an administrative center is likely to be much more sensitive to matters of file security.

Ultimately, the research library looms as the largest continuous consumer of computer power on the campus. When that time comes, it is entirely conceivable that libraries may dominate the campus computer realm. No other agency on campus affords more intellectual interaction with the academic community than does the library—which is exactly the reason why it is important for large libraries to continue experimentation and research in library automation. A failure aggressively to push research on bibliographic applications could lead to second-class computer facilities, and could put libraries many years behind other research components of the academic community.

Networks

Demonstrations of electronic networking have now become routine, but it would be misleading to believe that the establishment of regular, error-free networking is just around the corner. Existing telephone networks were designed for voice communication, not data transmission. Much old equipment is still in use; even though electronic exchanges are being rapidly installed, it may be 1980 or later before new technology is fully applicable to land lines. And there are many companies competing for the production and marketing of "interconnect" equipment. Accompanying the juncture of telephone and nontelephone interests are issues of performance standards, reliability, and technical standards—including establishing national use of the new ANSI (formerly USASI) code for data interchange and telecommunication. It is also apparent that the problems of networking, even in the local environment, are of no small intellectual and technical depth, and it would be folly to imagine that a large number of independent local networks are going to interact successfully on the first try. In all, many technical and economic hurdles remain; a common hope of all educational users is the planned educational communication satellite which might assist in reducing transmission rates and increasing reliability.

Pricing Computer Services

Exactly how one prices centrally furnished services is at times a matter of conjecture, but invariably one of controversy. The overhead cost of running a center is considerable—two and one-half to three times the straight hardware rentals—and includes physical plant, hardware maintenance contracts, software maintenance, user education, large quantities of published documentation to pro-

cure and maintain salaries and staff benefits, insurance for equipment, electric power and air conditioning, full rental for equipment which may be only partially utilized, failsafe auxiliary power, paper, spare disc packs, telephone service, travel to computer conferences.

Any time a peripheral device is attached to a computer, there is an associated software overhead. Someone has to write the software which makes that extra device work within the local software environment. Since each environment is unique, the vendor's software is sometimes a square peg. That is why every computer center needs a ready supply of systems programmers and why additional devices require payment of a surcharge or "installation fee." But unlike a telephone installation charge, the "installation fees" for computer peripherals can never be one-time charges because computer systems are never static.

Computer resources are a very peculiar quantity. In any installation, there is a finite and measurable amount of computing power, although the users would like to behave as though there were an infinite amount of the resource. All pricing schemes are designed to ration the fixed resource in accord with the value of a particular service to a given user. Flexible pricing schemes have been devised to control the user's behavior in the hope of distributing equitably the costs of all available resources. Flexible pricing divorces pricing and costing, raising the price of some resources to pay for an associated resource, which if charged according to its true cost, would be prohibitively expensive for the user.

The good pricing algorithms recover total operating costs inclusive of overhead. Thus, in a large scientific center which may be terminal oriented and whose mission is scientific data processing, there are two actions which slow down service to the majority of users: mounting tapes and changing forms in the printers. To discourage these activities a special service charge may be imposed. Likewise, to balance the load on the machine (and to balance the budget), special low rates may be offered in the overnight service block or corresponding extra charges imposed during the day to run urgent jobs at a high priority.

One more observation: Although unit machine costs are going down all the time, the more one has of a cheap resource—like quick photocopying, for instance—the more one is likely to use it, and the net effect may be more money spent. It's the total expense that counts, not the unit cost. Consequently, the more facilities automation gives us, the more likely are we to need more resources rather than less.

Change As a Way of Life

One final question on the use of a central facility: What protection does the user have if the central facility decides to change its hardware or software? A change is only inconvenient for the transient research population but it is catastrophic for any continuing function like the library or the administrative data processing center. Written negotiations may offer some protection, but these tend to be political and are never as satisfactory as problem-oriented solutions. In any case, it would be self-deceptive to believe that any system design can be frozen forever. Hardware and software will change continuously; the rate of change needs to be controlled and stabilized.

Any major system change will affect forms, files, personnel allocation, procedures, and organizational structure. A change in any of these areas involves a training responsibility for the systems staff plus appropriate sensitivity to interpersonal relations.

Time Scale for System Development

What can one realistically expect concerning the time scale to design, install,

and operate an automated library subsystem, such as circulation or acquisition? Shoffner has pointed out that much early design work was based on the assumption—now known to be false—that existing library operations were already known in considerable detail.[9] To provide this detail in the form necessary for adequate system design work is very time-consuming, and the failure to realize the required time commitments is responsible for much of the slippage observed in current projects.

Contrary to popular belief, the design and installation of a computerized system to perform a given function is anything but a mechanical process. Yet too many people still imagine that it is a simple, straightforward process to flow chart an operation, write a program, and start running. Once a logically correct program has been written, it is true that its execution will be mechanical—if no equipment malfunction occurs. To be logically perfect, the program's intellectual design must account for every conceivable detail and alternative in the function being automated. This degree of perfection is hardly ever achieved the first time because of our lack of precise knowledge about our operations; it is here that we are confronted (rather brutally and expensively) by the conceptual error that everything there is to be known about a given library function is already known in complete detail. Programming bears a much closer resemblance to space exploration or to a large building construction project, where unanticipated problems are constantly intruding into well-laid plans.

To reiterate: No computer system can be implemented in the absence of a series of systematic prescriptions resolving in the minutest detail all possible alternatives for all possible actions associated with a given application. The designers must have an exact picture in advance of the extent to which these minutiae must be described, documented, and incorporated into a design before a single program can be written. Popular misconception still talks about "what the computer will do," whereas the programmer knows the computer will insistently and stubbornly do only the things it has been instructed to do. The man-machine gulf is deep enough so that every programmer wishes for an imaginary command or instruction for his computer: "Do what I mean, not what I said!" These remarks are not meant in disrespect of the research being conducted in artificial intelligence, simulation of the nervous system, and other advanced projects. The goals of those research projects are thousands, perhaps tens of thousands, of man-years away. Computers in a workaday, production environment must still be told everything or they will do nothing.

Transferability

Since the inception of the computer era, transferability of software and system design has been a recurrent hope and theme. Theoretically, a program once written to perform a specific function would not need to be written a second time by a second user. This hope has been dashed by four factors:

1. Scale of system complexity: The larger and more complex the system the more likely is it to have components that interact with the total system on that machine. There are relatively few problems with the transfer of single-purpose batch programs or program modules, but even here, if data are to be processed by the transferred programs, it is essential that the source data be identically formated and flagged. For this purpose, a translation program may be required. If there is much complexity to the data, less programming effort may be required to start from scratch. (In actual fact, the last statement may not be true, but the programmer will have to be convinced.)

2. Machine incompatibilities from one

computer manufacturer to another, and even within the same vendor's line of equipment, and a lack of "upward compatibility," a widely heralded feature which did not prove out in practice. Engineering changes made to new machines, if not incorporated into those already in the field, introduce incompatibilities within the same model of the same maker's computer.

3. A third deterrent to ready transferability is local alteration of the machine operating system and other system software, including use of different releases of compilers and languages. Changes in these "executive" programs, which run the computer or compile programs, can often make application programs inoperative. When system software is customized, subsystems no longer function as interchangeable parts on physically identical machines. It becomes a bit like trying to fit the door of a Chevrolet onto the body of a Plymouth; it can be done, but it isn't worth the effort.

4. The fourth source of difficulty for transference of designs and programs lies in the fact that library *X* rarely wants to do exactly what library *Y* wants to do. As long as we insist upon tailoring the bibliographic record to a real or imagined special local need, there is little likelihood that the programs which process MARC tapes at one installation can process them elsewhere. Only the acceptance without change of a centrally produced bibliographic record and the abandonment of customizing data to local requirements will enable system designers to begin thinking about one software package to work for many customers.

Access to Machine-Readable Files

The structural complexity of bibliographic records and the semantic ambiguities associated with them greatly complicate the access task wherever there is no direct human intervention. How, for instance, would a machine system distinguish the nearly 45,000 "London" entries in the Library of Congress Official Catalog? Even though these subtle intellectual problems have not yet been solved, experimental on-line systems have demonstrated great power to retrieve references with far greater speed and much more flexibility than is afforded by manual systems. But we lack long-term experience with many users employing a large data base. Further, the dependability of on-line files for bibliographic applications has yet to be demonstrated in a production environment, though I am reliably informed that the intellectual problems of file reliability and security may be near solution in several different commercial and military applications. The cost of maintaining in machine-readable form large files subject to immediate on-line access is prohibitive right now but could be within reach for technical processing applications of large libraries or groups of libraries, if economic and technical solutions can be found for networking problems. (Costs of file maintenance for large manual files in large libraries should be monitored continuously to see if a breakeven point is nearing which could justify selective change to machine-readable files with reasonable prospects of near-term payoff.)

Yet why keep available on-line very large files where the probability of access to a given item is exceedingly small? We know little about how users access bibliographic information from printed media and still less about how they might extract data from other kinds of files. Considerable prior experimentation with large, machine-readable files is necessary if we are to know how to organize those files. Even so, use of the files after a period of time might very well result in a continuously changing file structure, which, ideally, should be transparent to the user, i.e., apparent and meaningful only to the systems programmers. In the

future we probably need to be prepared for partitioned files with different technical designs and differing echelons of accessibility, ranging from printed media through on-line indexes and computer-output-microfilm (COM) files. Partitioned files might range from on-line indexes, through off-line book catalogs, special chronological or subject files, COM catalogs reissued yearly with current updates available from small on-line files. This variety of products and services can only be envisaged because of the richness of the MARC II format, which affords great selectivity of data elements for the user. By selective omissions, we can conceive of a graded series of files whose complexity and access time are inversely related, with appropriate cost trade-offs. New ideas for file organization and access are badly needed; all will have to be tested for economic and technical practicality and user acceptance.

The cheapest method of accessing a static, little-used file is via a printed medium. Interest in on-line library files has undoubtedly been stimulated by successful commercial applications, some of which parallel library uses. Airline and hotel reservation systems are good examples of successful on-line applications and rapid file accessibility. Both deal with an extremely perishable commodity. The same is true of industrial parts lists and inventory control systems, where orders and cash flow are the controlled items. How perishable is bibliographic information? A fairly good case can surely be made for the perishability of technical processing or circulation data, which by definition are high activity, "update-intensive" files. The case is likely to be somewhat weaker right now for low activity files. How much is the user willing to pay for immediate access to a file? Suppose one can satisfy 85 percent of the over-the-counter circulation queries by means of a batch system with 24-hour turnaround, as is the case at Columbia University?[10] What would be the value of a more sophisticated system which might reduce turnaround to an hour? To a minute? Suppose it costs twice as much to reduce turnaround to an hour? Five times as much to cut it to a few seconds? If automation is to be cost-effective, the resource must be appropriately matched to the task at hand.

But in this connection it is well to keep in mind the rapid development characteristic of computer technology. Fast-response, large-capacity storage devices may be available sooner than one imagines. What looks impossibly expensive or beyond reach today can easily become tomorrow's necessity. Continuous contact with technical developments is an indispensable part of the system librarian's responsibility.

Communication and Documentation

Without proper documentation, a job is not finished, and the systems analysis work, design, and programming are useless. There are five purposes to documentation:

To make progress visible to one's sponsor.

To communicate one's intellectual product in the absence of its creators.

To communicate designs—for staff knowledge and participation—from the moment of conception through all formal design steps, terminating in completely coded, working programs.

To record the reasons for specific logical decisions and design features so that the originator does not have to depend upon memory in the course of revising or debugging designs and programs.

To communicate project results to the outside world.

Documentation does not fall out automatically as a by-product of a system development effort; it requires rigorous discipline. Unfortunately, there is nothing inherently romantic or fascinating about report writing; it is a burden. The

provision of adequate documentation requires first a person who can write in clear, articulate English and who understands both computers and libraries. These people are expensive. A project with a staff of five professionals should at least consider having a full-time editor to relieve the principal investigator of extensive report writing. If the professional staff is ten or more, an editor is indispensable.

National Goals and Priorities

Institutional uniqueness is a characteristic of current library automation activity. Each library appears to be going its own way, applying automation in much the same fashion as it applies conventional methodology. There is little agreement on what to do, in what sequence it should be done, and how we should do it. In short, we lack a national plan for dealing with the intellectual and managerial problems of library automation efforts. Our current endeavors—save for establishment of the MARC II standard format—are as fragmented as the manual systems they are intended to replace. Do we want to create a series of incompatible, local efforts? How can we resolve the inevitable conflicts of interest among institutions of differing sizes, budgets, and academic programs represented within a given group?

Joseph Becker suggests that some form of "social engineering" is needed to make it easier for large research libraries to contract among themselves for major systems development. Of course, such a suggestion implies a far greater commitment to standardization than the library community has evidenced to date. It must be remembered that fundamentally libraries are in the communication business. Efficient communication is completely dependent upon standardization—a fact that is being focused by the machine's intolerance for ambiguity. When we leave our oldest and traditional "software"—natural language and the written word—to take up the electronic impulse, we enter a world of unforgiving, impersonal rigor. To make the change successfully, it is doubtful that we can continue to go our separate ways as we have so expensively done with cataloging and classification.

We have given up self-sufficiency in collection building; will we give up some local autonomy in technical processing to benefit from the economies of standardization? My fear is that if we do not, we shall have fewer and fewer resources remaining for service to our clientele. This is a special hazard as libraries—especially in private institutions—enter a period of increased budget visibility. By some means, the desired and needed national goals and priorities must be identified; if we do not do it, it may be done for us. Neither we nor our users may care for the results.

Conclusion

Librarians have succeeded in demonstrating that a variety of library technical processing and public service operations can be computer aided. Significant accomplishments have occurred with relatively modest investments. Though few institutions can yet directly utilize anyone else's efforts, we are probably no different from the computer world at large in this respect. Both worlds may be suffering from lack of a national plan. These national policy issues—standards, program priorities, the kinds and degrees of bibliographic access, and some concerted attack on the economic problems surrounding computer applications—still await solution. It is my conviction that the solution of these problems is essential in order that research libraries may be able to service the present and future requirements of their users. The full scope of the problems of library automation is just beginning to be realized. Now is the time to marshal the country's best brains and resources in response to the recommenda-

tions of the National Advisory Commission on Libraries. We are beginning to define the problem; that is significant progress.

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PHYLLIS A. RICHMOND

The Ph.D. in Library Science

This article outlines some of the opportunities in libraries for holders of the Ph.D. degree, particularly degrees taken in specialties which did not exist ten or fifteen years ago. It is argued that the field is now much more attractive for the specialist in Library Science. At the same time, it is suggested that a research *degree is not necessary for administrative librarians, though a doctorate of a different kind may be desirable.*

ANYONE WHO HAS STRUGGLED through the process of obtaining a Ph.D. degree certainly would agree that it was a most vigorous experience. Very few people find it sufficiently untraumatic to go through it more than once. Graduate students are full of ideas for making the experience more meaningful—an uncritical graduate student is an anomaly—but these ideas have a strong tendency to vanish once the sheepskin is in hand.

The Ph.D. in Library Science (or Library Service or Library-and-Information-Science or what have you—the broadest sense is intended throughout this paper) is, comparatively speaking, a relatively new degree. For this reason a number of the faculty in library schools have taken their Ph.D. degrees in subject fields. Library science as a subject field in itself has not been so clearly defined as the more traditional fields, such as history, mathematics, psychology and so forth. Just what constitutes library science? It includes the standard subdivisions of cataloging, classification, reference, bibliography, book selection; it has also been extended to include information science (née documentation), some aspects of computer science, behavioral science, and anything else that seems applicable.

The upshot is that library science is a conglomerate of eclectic subjects. Moreover this conglomerate sprawls all over the field of knowledge, judging from the variety of dissertation topics and master's essays accepted. The eclecticism has been free and unlimited, particularly during the past decade.

Upon contemplation, this is not as bad as it sounds. Consider the variety of work in the library field. There is a place for everyone from the accountant to the group social worker, from historical bibliographer to architect, from linguist to chemist. Positions requiring subject competence not necessarily limited to book-centered activities are found in almost every major library. For many of these positions a dual master's degree is a minimum requirement and a subject Ph.D. almost a necessity. The "bookman" is not the only type of librarian.

So where then does the Ph.D. in library science fit in? Is there a need for a specialist in library science at the Ph.D. level? Why a Ph.D. in library science at all? What will this person do that a subject specialist cannot do? (Or perhaps one should ask, what will this person do that a subject specialist cannot do better?) Should we not continue to make do with converts from other fields? What

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special competence should a Ph.D. in library science command? Is only one area suitable for a Ph.D., or, like history, should one concentrate on groups, with major strength in one or two, and minor strength in two or three others, out of a choice of fifteen to twenty groups? Has the field of library science grown sufficiently to tolerate or even encourage a variety of Ph.D.'s as is the case with regular academic subjects? The answer to these questions may clarify the *quo vadis* involved in the development of Ph.D. programs.

Some twelve years ago, this writer published a paper on "The Subject Ph.D. and Librarianship."[1] Since then, the whole field of library science has changed, so that the mere possession of a Ph.D. degree in a subject field does not by itself qualify a person for many of the new areas which have opened up. Almost all of the early Ph.D.'s in library science went into administration or teaching. This is still the case in many instances, but the development of specialties in the library and the need for trained specialists to fill these positions have presented opportunities for those holders of the doctorate who are scholars and who wish to pursue scholarly interests instead of being bogged down in administration. In the past, it has been no help to the intellectual aspects of library science to have the most able personnel in the field tied up in administration when their talents were so badly needed in advancing the frontiers of the field itself.

Turning to teaching on the part of many of the earlier Ph.D.'s has been a necessity. Some graduates have wisely mixed teaching with practical experience, to the improvement of both. So far, versatility has been the hallmark of Ph.D.'s in library science.

The presence of specialist positions in major libraries offers hope that library science at last will begin to develop in its own right, and that the late twentieth century may again see a flowering of ideas, theories, and general progress in librarianship such as graced the last quarter of the nineteenth century.

What are the specialties now beginning to be supported in the libraries of the country? Here is a partial listing:

Bibliographer
Building Plans Specialist
Cataloging–Reference Subject Specialist
Communications Specialist
Information Systems Specialist
Media Specialist
Network Coordinator
Management Specialist
Rare Books (Special Collections, Archives) Specialist
Technical Information Specialist
Research Specialist
Library Education Specialist

Undoubtedly more could be added. Some of these fields already have enough substance to support a Ph.D. program and enough content to interest a scholar who wishes to devote his life's work to it. Thus the answer to our first question, "Where does the Ph.D. in library science fit in?" can be answered by citing the above twelve specialist fields, as a starter. No longer is the holder of the doctorate limited to administration and teaching, a factor that should attract many able candidates.

However, there is a little more to the picture than this. Each of the above specialties requires expert knowledge of another subject field (or fields) besides library science. The Ph.D. limited only to library science disciplines will not qualify for these positions. The base for the Ph.D. must be broad enough to allow for collateral lines of study. Thus the Ph.D. program recently begun at Syracuse University will turn out a Communications Specialist (Information Transfer). Other programs elsewhere will turn out other kinds of specialists.

The reason subject Ph.D.'s are being used in specialist positions in libraries is that library science programs to date have tended to be too narrow. This means that the library school will have to develop good cooperative relationships with other departments of the graduate school so that the library specialists will be trained to competence in both the subject area and library science. This is preferable to bringing subject specialists into the library school to teach a watered-down version of their fields according to *what they think is palatable* to librarians and information scientists. One runs the risk of losing good students to the subject field, but it is better to teach the subject per se and library science per se and to help the student bridge the gap in his own head via a general seminar or through his choice of dissertation topic, than to turn out a graduate who cannot hold his own in the subject field in which he proposes to be a specialist. It is all a matter of balance.

The point is easier to see if considered in terms of library science courses taught to nonlibrarians. A course cannot go "cultural" (as is the case with courses in physics or mathematics for people who are not going to major in the subject) and still retain its full vigor for training specialists. There is a need for specialists in libraries at the Ph.D. level, provided this person is a specialist both in the subject and in library science. At this time, it is suggested that the *course work* would produce levels of competence in both areas, while the dissertation topic would be chosen carefully to unite the two, centering on themes which are unique to the type of speciality selected.

The specialist with the Ph.D. in library science should be competent in at least one of the various areas of that science now lacking in the subject specialist, especially the subject specialist without a library degree. In other words, what is proposed here is to take back the specialties in the library field from the nonlibrarians. The doctorate suggested here is a hybrid, and its value lies in its hybrid features—in the erudition of its holder both in the subject and in library science. It is, in effect, equivalent to the present "scientist oriented to bibliography," or "psychologist or sociologist oriented to epistemology via audiovisual media," but with the coin reversed so that the emphasis would become "bibliographer of science" or "media specialist oriented to learning processes." The specialist who just "fell into" his specialty during the expansion of the library needs in the past fifteen years would be succeeded by one who has deliberately chosen the field and become educated in it.

There is a difference between the two. The pioneer specialist, who came into the area vicariously and learned mostly by trial and error, may not be the prototype of how the position should be filled, for he created the specialty pragmatically. This is a phenomenon of expansion, since so many specialists have independently created what is essentially the same type of position. Now the next step is to design a curriculum which will consolidate the creation and improve the product.

The fact that at least twelve specialties can be identified indicates the new breadth of the field of library science. There is a cross-fertilization process, with more scope than traditional branches of library science. One could almost consider the process as a kind of matrix in depth, with the subject fields on one side and the traditional branches on the other, and the third side is composed of the various technical features which make up the field of information science. Whether library science and information science are separate but equal or a unity with multiple branches is a moot question which will not be answered here.

Suffice it to say that some of the newer branches of information science which grew out of but are not entirely a matter of the application of technology to bibliographic organization and procedures are very important in the specialties enumerated.

The library specialist must not only be dually educated in a subject in addition to library science, but it must be only one subject and only one branch of library science. One cannot turn out a competent subject specialist possessing just a smattering of library science, such as would be the case if a single seminar covered all areas. The library specialist must be well versed in all fields generally, to the master's degree level in both subject field and library science, but then specialized in one area of each, taken simultaneously, for depth of scholarship which is not a function of the master's degree program in either subject or library science. Presumably the two areas would be tied together by the topic of the student's dissertation. Conceivably, therefore, one might get dissertation topics as: "The development of cataloging/classification theory as a manifestation of American cultural development in the last quarter of the nineteenth century" (cataloging/classification plus American cultural history); "Analytical and descriptive bibliography of the works of x" (bibliography and literary criticism focusing on a certain author); "Computer analysis of the index terms in certain major reference tools" (computational linguistics, indexing and reference); "The library's public in the central city" (sociology/social work and public libraries); "The library society as a pressure group" (political science and library organization).

To do such work requires depth of knowledge in both fields. In addition to the usual graduate courses and seminars offered in subject fields, there must be graduate courses and seminars in depth in library science. These are not now as evident as they should be because the present master's degree program requires so many basics in the single year devoted to it. One can obtain no depth until the basics are mastered, which throws the specialized courses into a second year in most fields, notably in classification, cataloging, bibliography, and some parts of information science. This very definitely suggests that, for the Ph.D., library science should be divided into as many discrete fields as pertain to the subject, and the student should select areas of concentration in which he wishes to be examined, as is the case in other subjects. After all, a polymer chemist does not need expert knowledge in all branches of chemistry, so why should a library specialist require generality beyond that required in the basic level of the present master's degree program? In other words, he should have the knowledge considered as fundamental to the field and presented in the master's program, and after that be permitted to specialize according to his interest. Then the library science part of the total program has a chance to include some depth, as the subject field part will do automatically when he takes the standard graduate courses in the regular graduate school.

So much for the library specialist. What about the Ph.D. for the administrator? Here one may question the value of a *research* degree, a scholarly degree for a person who almost certainly will find it difficult to pursue serious research of a scholarly nature. The projected Illinois plan for a doctoral degree called something other than Doctor of Philosophy might be better for the administrator.[2] Such a plan could consist of three or four years of courses plus a comprehensive set of examinations rather than two or three years of courses and a dissertation. This would salvage a good many would-be Ph.D.'s who never write

their dissertations and so never complete that part of the Ph.D. program which proves that the candidate has learned how to produce an original, scholarly piece of research.

It could be and probably will be claimed that the doctor's degree without a dissertation is a "Mickey Mouse degree," but it does not have to be. After all, one can argue that what the administrator needs most is the title of "doctor," and a broad background in all areas of library science, though he may specialize in a single type of library. He may not be required to publish as much as his nonadministrative colleagues; committee work may take the place of publication. There are all kinds of doctor's degrees, at all levels of quality, but once the diploma is in the fist, it is the actions of the person that really matter and not the kind of degree earned. A good proportion of Ph.D.'s in all fields produce little or nothing in the way of scholarly work, suggesting that the degree was obtained for reasons other than a desire for an intellectually oriented life. The Ph.D. in library science might be geared to attract aspiring researchers, teachers, and specialists, with some other kind of doctoral degree for administrators and general practitioners.

Since the library field is broad and since, like any other profession, it encompasses a workaday world somewhat removed from its research world, surely there is room for both types. This adds a greater rather than a lesser burden to the library school's work, but it is also more realistic. The master's degree program provides the basic general education; a non-Ph.D. doctoral degree would provide competent administrative leadership, while a Ph.D. would produce scholars to extend and amplify the research base necessary for progress in the field. On the doctoral level, this is roughly like the division in modern physics between theoreticians and experimentalists.

Library science has progressed to the point where it can support specialists. Now it behooves the schools to produce them, and at the same time continue to turn out high-level administrative personnel. The same program is neither desirable nor necessary for both types.

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RICHARD DE GENNARO

Harvard University's Widener Library Shelflist Conversion and Publication Program

This paper briefly reviews the essential background and reports on the progress, evolution and future outlook of this unique program. It then describes in some detail the present and potential uses that can be made of the shelflist of a major research library after it has been converted to machine readable form and can be manipulated by computer. The uses fall into two broad categories: publications and reader services, and library management and statistical uses. It is a nontechnical article for librarians and library users.

Introduction

In 1964 Widener Library, the central research collection of Harvard University, developed a system for converting its manuscript sheaf shelflists to machine readable form and embarked on a project to computerize the 1.6 million entries in the list. To date, more than 600,000 records from some of the most active classes in the library have been converted and used in various ways, and the project continues as an accepted and important part of the library's automation operations. The project has now come of age; its feasibility and usefulness are firmly established and it seems appropriate at this time to review briefly the essential background of the program and to report on its progress, evolution, and future outlook.

The previous papers on the Widener shelflist project were largely concerned with the strategy and the techniques of converting this large and unique file into machine readable form. This paper will stress the present and potential uses that can be made of the shelflist of a major research library after that conversion (or a large part of it) has been completed. Two main categories of uses will be discussed: (1) the production of publications of various kinds and the provision of other reader services; and (2) library management uses including the generation of statistical and other data for further automation, for managerial purposes, and for general research.

Review of the Project

The justification for embarking on the ambitious project to convert the estimated 1.6 million handwritten entries in the old loose-leaf sheaf shelflists in Widener Library can be found in an article entitled "A Computer Produced Shelflist" which appeared in *CRL* in 1965.[1] The project was placed in the larger context of the Harvard Library's overall automation program in another article, "Auto-

At the time this paper was written, Dr. De Gennaro was Senior Associate University Librarian, Harvard University. He is now Director of Libraries, University of Pennsylvania.

mation in the Harvard College Library" which was published in 1968.[2] A technical description of the operation in its early stages was written by Foster M. Palmer in 1966.[3] No detailed technical descriptions of the computer systems have been published since that time, although specific information can be obtained from internal working documents. The preparation for publication of technical descriptions of a rapidly evolving system of a local nature is time-consuming and difficult to justify. This article will merely sketch in enough of the project's background to make it comprehensible without reference to the earlier papers. No technical material will be included.

A library shelflist is a record of the books arranged in the order in which they appear on the shelves. It is maintained primarily as a tool for assigning new and unique numbers to books that are added to the collection and as an inventory record of the books in a library. Since the book collections in most American libraries are arranged in classified order, the shelflist is potentially useful to scholars, particularly if it can be made available in convenient form and if classification schedules and author and title indexes are provided. For most libraries the maintenance of a shelflist is a routine process and involves merely filing a copy of each main-entry card into the card shelflist in call-number order. However, the Widener shelflist, for historical reasons, is largely handwritten in loose-leaf volumes, rather than on cards, and is therefore difficult to use and maintain. In 1964 it became evident that, through the use of computer technology, the library could modernize the shelflist maintenance procedure and at the same time make an expanded version of the shelflist available as an additional approach to the library's holdings. Accordingly, an experimental system was designed to convert the shelflist to machine readable form and, after a successful pilot project, a full-scale conversion and publication program was begun in 1965.

The initial system was somewhat primitive, with input and output limited to the standard uppercase character set that was then commonly available on computer print chains. In June 1966 the system was improved so that the input could be coded with an expanded character set to produce output with both upper- and lowercase letters and the required diacritical marks. The output for the published volumes continued to be produced by photo offset from a computer printout until further improvements in the system made it possible, late in 1969, to produce graphic arts quality printer's copy in double columns by computerized photocomposition techniques. The evolution of the output format is virtually complete; all further improvements will be in the input, processing systems, and development of new products.

To date, more than 600,000 entries of the total 1.6 million in the shelflist have been converted. Twenty-two volumes have been published in the *Widener Library Shelflist* series and a dozen more are scheduled for publication in 1970. An estimated twenty-five to thirty additional volumes will be required to complete the series. Several of the classes that were initially keypunched in the limited uppercase format have been converted by a combination of computer program and manual editing to the new standard expanded character set and format, while the rest will be completed by the end of the year. Thus, all the records in the system will soon be in a single uniform and compatible machine format. The master files are arranged in classified or shelflist sequence on magnetic tape. Widener call numbers are machine processable and, since the numbers are unique, they also serve as identification numbers for the machine records.

The entries in the old manuscript

shelflists are not bibliographically complete. They were limited to call number, volume count, author, title, place, and date of publication. Frequently the author's forenames were not spelled out and the titles were shortened. Notes, added entries, and subject headings were not included. The strategy of the conversion project is to accept the entry essentially as it is with some few exceptions; obvious errors are corrected, authors' full names are added when easily obtainable, abbreviations in titles are spelled out, and a language code and a code distinguishing serials from monographs are added. All elements present are tagged so as to permit machine manipulation. The average number of characters per record is 100, while full LC records are estimated at 350-450 characters. This enforced limitation on the quality and completeness of the records is unfortunate for many reasons, but it has made the conversion and publication projects economically and technically feasible. Had the shelflist contained complete bibliographical records, the project would not have been attempted, for various reasons.

Since clean and accurate copies of the Widener classification schedules are a necessary prerequisite for the preparation of the published shelflists, a major program was undertaken in 1966 to revise and edit the schedules. The schedules are being converted to machine readable form, and a computer program used to facilitate editing as well as to format them into the two distinct forms that are required for the published lists.

All shelflist conversion and editorial work is done in the library with regular library funds by a staff of eight nonprofessionals. It has become a routine activity of the Data Processing Division and funds for the completion of the project within the next several years seem assured.

The design and programming of the system has been accomplished entirely by librarians trained as systems analysts. The routine computer work has been done for the most part on an IBM 1401 which has 8,000 positions of core storage and four tape drives and is located in the library. In 1970 the 1401 will be phased out after the entire system has been redesigned and reprogrammed to run on an IBM 360-65 located in the University's Computing Center. The system conversion will be done by the library's data processing staff. The occasion will be seized to convert the local shelflist system into a more permanent and standardized system based on the MARC II format. When the present system was designed, the MARC II standard format for bibliographic entries in machine readable form did not exist. That format has now been completed and widely accepted internationally, and programs are being written at several centers to manipulate bibliographic data in that format in various ways and for various purposes.

Although Harvard shelflist entries are not as complete as full LC MARC II entries, the elements that are present can be tagged and put into the format, and those that are not can be left blank. When the library develops a system to input its current cataloging in the MARC II format, those entries can be integrated into the new shelflist system, since the machine format of the two kinds of entries will be compatible even though they differ in the amount of data included.

In the more distant future it is expected that the present brief shelflist entries will be superseded by standard bibliographical records in MARC II format. Given the growing interest in retrospective conversion at the national level, it is reasonable to foresee that a central bibliographical agency will convert and distribute these entries and that Harvard may be able to substitute them for its own incomplete entries.[4] But this is a distant and as yet uncertain possibility.

Meanwhile, Harvard will have realized a satisfactory return on its investment in converting its abbreviated shelflist entries. The nature and extent of that return is the subject of the remainder of this paper.

Uses of the Machine Readable Data Base

The present and potential uses of the Widener shelflist data base fall into two broad categories. The one involves creating and publishing new or special listings of the holdings of the library for the use of scholars, bibliographers, and librarians at Harvard and elsewhere. The prototype is the published shelflist series; this series and its possible future variations will be discussed first. The other involves using the machine readable data base to improve or facilitate certain library operations such as shelflist maintenance, circulation control, collection building, and the generation of statistical and other information for management and analysis purposes.

Publications and Reader Services

The publication of the Library's shelflist was one of the principal justifications for converting the shelflist to machine-readable form. The rationale is stated succinctly in the preface to the published volumes:

> In the absence of a classified catalog, the shelflist has long been used by librarians and experienced library users as a means of systematically surveying the library's holdings in a particular subject. When perusing the shelflist one sees all the titles that have been classified in a given area, and not merely those which happen to be on the shelves and whose spine lettering is legible. In addition, one can take in at a glance the essential bibliographical description of a book—author, title, place and date of publication. However, the potential usefulness to readers of the Widener sheaf shelflist in manuscript form has never been realized because it existed in only one copy. Moreover, it was kept in a relatively inaccessible area, was awkward to read and frequently difficult to interpret. Computer technology has made it possible to enlarge the concept and to expand the uses of the shelflist while improving the techniques of maintaining it and making it available to readers. . . . The development and publication of the shelflist in this form is an attempt to equip the serious reader with a copy of the classification scheme that has been used to organize the collection, together with lists in classified, alphabetical, and chronological order of the books and journals in each class.

After each class and its corresponding classification schedule have been converted to machine readable form, a three-part catalog of the holdings in the class is published in the *Widener Library Shelflist* series. The first part contains the classification schedule and a list of the entries in the class in call number (i.e., classification) sequence with subclass headings (derived by program from the machine readable classification schedule) interspersed throughout the list. The second part is an alphabetical listing by author and by title and is obtained by a programmed computer sort of the original entries, and the third part lists each entry again chronologically by date of publication. Thus, each entry is listed four times.

The first twenty volumes in the series were produced by photo-offset from photographically reduced computer printouts and averaged about seventy entries per single-column page. Beginning with volume 21, all page copy has been set in 6-point Times Roman type in double columns by a computerized photocomposition technique, with approximately 140 entries per page. Volumes are 8½″ x 11″, printed on durable paper, and cloth bound. The library is the publisher.

The published volumes are extensively used in the Harvard libraries in a variety of ways by both readers and staff. Sets of the entire series are located in reading rooms for reference and in the stacks for circulation to readers. Copies

of the volumes covering particular classes are located in special boxes attached to the end panels of the stacks in which the class is located and are used by readers as browsing guides and as convenient finding lists. The availability of the series also tends to reduce somewhat the objections to shelving infrequently used books by size in storage areas outside the library, because these titles are retained in the shelflist with a symbol showing the actual location of the book in storage. The volumes are also used by book selectors in building collections as well as by inter-library loan staff, both at Harvard and in other libraries. Since the shelflist volumes form subject catalogs of specific portions of the collection, and since, unlike book catalogs of entire libraries, they can be purchased separately, many individual scholars acquire personal copies of the volumes covering their field.

All costs of the shelflist conversion project, including systems development, conversion, editing and machine costs, have been borne entirely by the library from regularly budgeted funds. All costs incurred in the actual publication of the series, including final computer sorts, photocomposition, printing, binding and distribution, are met from sales receipts. Within this framework the published series has been self-supporting from its inception. The rationalization for this large expenditure of library funds is that conversion of the old manuscript shelflist is a necessary improvement of the library's record-keeping operations and that the investment in conversion (an estimated thirty cents per entry) will be amply justified by long-term savings in shelflist maintenance and other library management gains. Other savings—impossible to measure—are in the time and effort of readers and staff who use the printed shelflist catalogs in lieu of going to the card catalogs. James L. Dolby makes this point nicely in his recent book on computerized book catalogs:

> In particular, we claim that no careful study is necessary to show that a printed catalog on the desk of the user, or at least in the immediate vicinity of his office, is a sufficient advance over the present card catalog to provide a substantial time advantage in his use of the catalog. At the very least, the user is saved a trip to the library for all those searches that prove to be fruitless. Further, in an automated catalog it is feasible to produce many more different orderings of the catalog (and subsets thereof) than is feasible in a card system. This in turn increases the number of access points to the library collection and the over-all utility of the catalog to the user. It may be difficult to put a precise dollar figure on the value of added access, but at the first level it is certainly sufficient to offset minor cost increments in the cataloging operation.[5]

The selling price of the individual volumes ranges from $10 to $45 and is based on the number of pages, the estimated sales potential of the particular volume, the manufacturing cost, and in special cases, such as the Slavic class, the amount and cost of extra editorial work.

Since the shelflist in this form was a new and unfamiliar kind of bibliographical tool, and since the promotion efforts were deliberately limited, sales were initially slow and tended to be limited to the larger American research libraries, many of which placed standing orders for the series. Sales have increased as the series has become larger and better known and as the format has been improved. The market for volumes has ranged from four to eight hundred copies, depending on the subject covered; while further improvement is possible, it is unlikely that the sales of any volume will exceed a thousand copies. There has been a market for these volumes because they list the holdings of one of the world's great research libraries and as a result are valuable tools for librarians and scholars. To date the following volumes have been published or are in preparation:

Volumes Published:

1. *Crusades.* 1965. 82 pp., 1,202 titles. $3. *Out of Print.*
2. *Africa.* 1965. 790 pp., 13,335 titles. $25. *Out of Print.*
3. *Twentieth-Century Russian Literature.* 1965. 428 pp., 9,430 titles. $20. *Out of Print.*
4. *Russian History Since 1917.* 1966. 698 pp., 13,722 titles. $30. *Out of Print.*

5-6. *Latin America.* 1966. 1,492 pp., 27,292 titles. 2 vols., $65.

7. *Bibliography.* 1966. 1,066 pp., 19,643 titles. $40.
8. *Reference Collections.* 1966. 187 pp., 4,300 titles. $10. *Out of Print.*

9-13. *American History.* 1967. 4,087 pp., 83,867 titles. 5 vols., $175.

14. *China, Japan and Korea.* 1968. 494 pp., 11,388 titles. $25.
15. *Periodical Classes.* 1968. 758 pp., 25,685 titles. $25.

16-17. *Education.* 1968. 1,610 pp., 32,722 titles. 2 vols., $60.

18. *Literature: General and Comparative.* 1968. 189 pp., 5,065 titles. $10.
19. *Southern Asia: Afghanistan, Bhutan, Burma, Cambodia, Ceylon, India, Laos, Malaya, Nepal, Pakistan, Sikkim, Singapore, Thailand, and Vietnam.* 1968. 543 pp., 10,292 titles. $20.
20. *Canadian History and Literature.* 1968. 411 pp., 10,212 titles. $17.50.
21. *Latin American Literature.* 1969. 498 pp., 16,900 titles. $40.
22. *Government.* 1969. 263 pp., 7,190 titles. $20.

Volumes in Preparation:

23-24. *Economics.* 1970. 1,800 pp., 65,000 titles. 2 vols., $95.

25. *Celtic Literature.* 1970. 192 pp., 7,500 titles. $25.

26-27. *American Literature.* 1970. 1,600 pp., 50,000 titles. 2 vols., $95.

28-31. *Slavic History and Literatures.* 1970. 2,700 pp., 93,000 titles. 4 vols., $190.

32. *General European and World History.* 1970. 35,000 titles. $50.
33. *Reference Collections.* 1970. 160 pp., 5,000 titles. $10.
34. *African History and Literatures.* 1970. 500 pp., 16,000 titles. $35.
English Literature. 1971. 108,000 titles.
Finnish and Baltic History and Literatures. 1971.
Spanish History and Literature. 1971.

Note: Another 25 to 30 volumes will be required for the remaining significant classes which are scheduled for publication. Many minor and lesser-used classes will not be published in the series.

In 1968, after a thorough analysis of the cost and other factors, a decision was made to change the output system to produce printer's copy by a computerized photocomposition process and to discontinue using line-printer output for publication. The logic behind the decision was that the increased page density of photocomposed text would reduce the number of pages in a volume by approximately one-third thus reducing printing costs by a similar amount, while increasing the quality and legibility of the book. Although the cost of creating a photocomposed page is several times the cost of a line-printer page, the increase would be more than offset by the reduction in printing costs. Experience proved that this was the case but the savings were not as great as anticipated because the cost of the additional computer time required to prepare the tapes for input into the photocomposition machine were underestimated. It costs slightly more to produce the photocom-

posed volume, but this added cost is justified because it improves the quality of the finished book immeasurably. The slight increase in cost for producing printer's copy in this manner is a temporary penalty only; a significant drop in photocomposition costs can be expected in the next few years as the equipment improves, as the volume of business increases, and as the industry becomes more competitive. Even at current prices, photocomposition is a minor cost breakthrough for the production of book catalogs, particularly in large editions where the savings in printing and paper costs are important.

The relatively new COM (computer-output-microfilm) technology may well provide the solution to the problem of producing small editions of book catalogs at acceptable costs. This process produces output from a magnetic tape onto 16 or 35 mm microfilm at tape running speeds.[6] The cost of producing the film is considerably less than line-printer output, and the quality of the print image is somewhat superior to that of the line printer. However, it does not compare with photocomposed copy, which is significantly better but several times more costly.

The COM output can either be used in microfilm or automatically enlarged to full-sized master copy for reproduction in small editions. Because of the poorer quality product and other uncertainties, the COM process is not being considered as a possible alternative to the present photocomposition process. However, it is being considered as a means of maintaining the official shelflist and more will be said about this later.

In the longer range, and particularly after the entire shelflist has been converted, COM will offer many interesting possibilities for exploiting the shelflist data base so that a whole variety of listings in different sequences and for different purposes can be published in small, inexpensive microform or even full-sized editions depending on the need and use to be made of them.

The problem of issuing supplements or revised editions of the volumes in the current *Shelflist* series is a difficult one. The publication and distribution of supplements to the individual volumes is questionable from the point of view of both costs and usability. It has been rejected in favor of issuing new and enlarged editions when the basic volume has become seriously outdated, generally after five or more years. Thus, the contents of the first volume, *Crusades*, will be included as part of the *General European and World History* volume; volume 2, *Africa*, which was published in 1965, will be revised, enlarged and reissued in 1970 in the new photocomposed format; other early volumes in the series will be treated in a similar manner. In the future, the problem of publishing subsequent editions may well be solved by advances in technology and improvements in the economics of publishing. COM and reductions in the cost of photocomposition and computing are reasonable expectations in the near future.

As has already been suggested, these developments may make possible the publication of special or even custom listings of great usefulness, but of relatively limited demand. For example, upon completion of conversion of the entire shelflist it might be desirable and feasible to produce, by COM at an acceptable cost, an up-to-date microform edition of the entire file in classified, author and title, and chronological sequence. Listings by language would also be possible as would a listing of all serials and journals in the collection arranged in a single alphabetical sequence. Current accessions lists would be another useful product.

The technique of merging several related classes into a single sequence has already been accomplished with excel-

lent results and could be further exploited. An example of this would be to expand the Slavic History and Literature class into a comprehensive Slavic area studies catalog by adding the Slavic titles from other classes such as Education, Folklore, Philology, Sociology, Government, etc. The technique could be applied to other areas such as Africa and Latin America. New shelflist-type catalogs of Judaica and other subjects might be created by pulling together the bibliographic entries that are located in the various country and literature classes as well as in Sociology, Folklore, etc. Miscellaneous scattered titles might be located by searching the tapes for certain key words in titles. The results would have to be edited to eliminate false drops but the process might be useful as a first pass. Similar techniques could be used to search the data base and create special or custom listings for individual scholars or groups on request.

When it becomes economically feasible to store such a large data file in a direct access device and to search and manipulate it from a cathode ray tube console, the possibilities for making interesting and novel uses of the data will be expanded enormously. While mass storage and on-line direct access is an operational technology today, it will probably be several years before it will be economically feasible in the research library environment.[7] It seems idle, therefore, to speculate about these interesting but relatively remote possibilities in an article set in the context of current economic realities in libraries. Recent experience indicates that improvements in computer and photographic technology are occurring at an ever-accelerating rate, and the possibility of dramatic advances and cost breakthroughs in the next few years should not be discounted.

A long range but still realistic idea is the possibility of turning the conventional library shelflist into a kind of classified catalog once it has been converted and is maintained in machine readable form. The basic difference between a conventional shelflist and a classified catalog is that the shelflist treats a book as a single physical object and records it only once, no matter how many subjects it covers, while a classified catalog records the book in as many places as its subject requires. With a computerized shelflist, the reason for this limitation no longer exists; a book can be given one number to record its physical location, and several other class or base numbers to indicate facets of content. Thus, a single book could appear several times and in various classes. The two types of call numbers would be distinguished by a symbol or other means, and these added entries could be printed or suppressed depending on the use to be made of the list. The introduction of this innovation in shelflisting can only be done after conversion has been completed and it has, therefore, not yet been proposed for the Widener shelflist.

Library Management Uses

The present system for adding entries to the official copy of the computer-produced printout shelflists is identical with the system for adding to the old manuscript shelflists. The machine lists are printed with five blank lines between the entries in order to leave space for writing in new additions. Periodically, and as the pages become crowded, all new entries and changes in the list are keypunched and added to the master tape file and a new printout replaces the old one. The inefficiencies of this procedure are obvious, but they were tolerated in the early stages of the conversion project on the grounds that it was preferable to have a single shelflisting procedure for both manuscript and machine-produced shelflists until such time as the proportion of machine lists increased to a point where a second system would yield significant savings.

Now that more than a third of the shelflist, including many of the most active classes, is in machine form, the conceptual design of a machine based system for maintaining official copy has been developed and is being considered. It can be briefly described as follows: all classes in machine format would be updated and produced in an efficient single-spaced format on microfilm or microfiche using a COM (computer-output-microfilm) technique. This film would serve as the official shelflist copy along with a temporary card supplement. Book numbers for new books would be assigned by consulting both the film and the card supplement. The number would be preempted by making a temporary slip for it in the supplement, and this slip would be replaced by a unit card after it had been produced. Periodically the contents of the card supplement would be converted to machine form, merged with the master tape, a new cumulated official film or fiche version would be produced by COM, and a new card supplement would be started. This procedure could be further simplified after developing and implementing a system to input current cataloging into machine readable form, but even in the interim the savings would be substantial. Assuming a cost of five cents per frame of microfilm containing 80 entries, the entire shelflist of 1.6 million entries would require 20,000 frames and could be produced for about $1,000 on approximately 12 reels of film. A microfiche version would require only 250 4″ x 6″ fiche.

Computer printing and other costs would be substantially less than in the present system. Shelflisting now requires a staff of four persons and an area of 600 square feet. It could probably be reduced to a single work station located in the cataloging room where it logically belongs, while reference copies could be maintained in other locations.

The completed shelflist file can be made to serve many of the purposes of a central bibliographical record in machine form. By running call numbers against this file a variety of products could be produced such as machine readable book cards for an automated circulation system, lists of overdue books, missing books, and books to be replaced or purchased in duplicate. In short, any list of call numbers could be expanded into full shelflist type entries by simply key-punching them and matching them with the data file by the aid of a program.

The records of the one and one-quarter million circulation transactions made in Widener since 1965, when the machine system was installed, have been preserved on five reels of magnetic tape and constitute an invaluable and unique data base from which statistical analyses of the use of the collection have been made.[8] One of the chief limitations of this file comes from the fact that the bibliographic data in the charge records is limited to call numbers. This limitation can be overcome by using the call numbers to extract the complete entries from the shelflist file. Thus, for example, listings of the most frequently used titles could be obtained by sorting the charges in the order of frequency of use and using the resulting call numbers to obtain a listing of the bibliographical entries from the master shelflist file. Decisions about where to locate material in the library and which material to send to deposit collections can be made on the basis of these statistics. Such potentially useful management information has never before been available to library administrators.

Another area of statistical analysis that is opened by the existence of the master shelflist file is the analysis of the collections themselves, their make-up, their rate of growth over the years and in various subject areas. Detailed and accurate counts can be obtained of the individual classes and of the collection

WIDENER LIBRARY SHELFLIST, 21

AUTHOR AND TITLE LISTING

SAL 5611.14.100 Dialogos en "La reina del mar". (Garcia, J.J.) Bogotá, 1965.
SAL 5723.6.100 Dialogos en otros mundos. (Restrepo, Felix.) Manizales, 1936.
SAL 7723.1.35 Diálogos limpicos. v.1-2. (Reyles, C.) Buenos Aires. 1919.
SAL 9125.19.100 Diálogos no espelho. (Bandeira, Antônio Rangel.) São Paulo, 1968.
SAL 4870.18.120 Dialogos y "cuentos de mi paisaje". (Medinaceli, Carlos.) La Paz, 1963.
SAL 5657.1.32 Dialogos y juguetes escénicos. (Leon Gomez, Adolf.) Bogotá, 1909.
SAL 7113.35.120 Diamantes y pedernales. (Arguedas, Jose M.) Lima, 1954.
SAL 9171.50.120 Diamantina. (Delfino, Aldo.) Bello Horizonte, 1914.
SAL 427.82.100 El diametro y lo estero. (Rossardi, Orlando.) Madrid, 1964.
SAL 9149.99.41 Diário. Capa de Carlos Penafiel. (Cardoso, Lucio.) Rio de Janeiro, 1960?
SAL 9272.51.140 Diário crítico de Sérgio Milliet (1940-1943). (Milliet, S.) São Paulo, 1944-45. 2v.
SAL 321.1.15.15 Diario de amor. (Gómez de Avellaneda, G.) Madrid, 1928?
SAL 4409.90.320 El diario de Gabriel Quiroga. (Galvez, Manuel.) Buenos Aires, 1910.
SAL 1526.6.110 El diario de José Toledo. Novela. 1a ed. (Barbachano Ponce, Miguel.) México, 1964.
SAL 922.55.100 Diario de la montaña, 1957-1960. (Ramírez de Arellano de Nolla, Olga.) San Juan, 1967.
SAL 5679.86 Diario de Lecumberri. (Mutis, Alvaro.) Xalapa, 1960.
SAL 7720.41.200 Diario de naje a París. (Quiroga, H.) Montevideo, 1950.
SAL 1740.25.51 Diario de nuestro viaje a los Estados Unidos. V. 2. (Sierra, Justo.) Mexico, 1938.
SAL 7627.3.100 Diario de Roberto. (Halegua, I.) Montevideo, 1960.
SAL 5513.12.120 Diario de un peatón. (Arciniegas, German.) Bogotá, 1936.
SAL 4545.77.100 Diario de un solteron penitente. (Speroni, Miguel Angel.) Buenos Aires, 1940.
SAL 5206.65.100 Diario de una "patinadora". (Frontaura, Rafael.) Santiago de Chile, 1963?
SAL 7189.14.31 Diario de viaje. (Escobar, Alberto.) Lima, 1958.
SAL 7780.3.41 Diario de viaje. (Viana, Francisco Javier de.) Montevideo, 1
SAL 9189.14.220 Diario do Exércit de.) Rio de Ja
SAL 9121.5.120 Diario I; difícil é Janeiro, 1962.
SAL 8076.10.100 Diario intimo. (M
SAL 4327.66.1100 Diario poético, ab Aires, 1961.
SAL 1731.33.100 Diario semanario Xalapa, 1961.
SAL 296.41.130 Diarios de viajes.
SAL 9226.41.2800 Dias, Fernando Cerreia. José Alphonsus: tempo e modo. Belo Horizonte, 1965.
SAL 9173.5.110 Dias, Jeófilo. Poesias escolhidas. São Paulo, 1960.
SAL 9173.5.2100 Dias, Oscar. Perfil com movimento. Goiânia, 1966.
SAL 9173.5.100 Dias, Theophilo. O comedia dos deuses; poema. São Paulo, 1887.
SAL 4569.3.100 Los dias. (Uribe, B.) Buenos Aires, 1959.
SAL 4310.23.100 Dias ajenos. (Antenta, E.) Buenos Aires, 1962.
SAL 365.1.3 Días amargos; poesías. (Malde Vizoso, E.) Habana, 1915.

SAL 5060.70 Diaz Arrieta, Hernán. Las cien mejores poesías chilenas. 3a ed. Santiago de Chile, 1957.
SAL 5060.71 Diaz Arrieta, Hernán. Los cien mejores poesías chilenas. 4a ed. Santiago de Chile, 1962.
SAL 5022.16 Diaz Arrieta, Hernán. Los cuatro grandes de la literatura chilena. Santiago de Chile, 1963.
SAL 5137.1.82 Diaz Arrieta, Hernán. Don Alberto Blest Gana. Santiago de Chile, 1940.
SAL 5218.19.820 Diaz Arrieta, Hernán. Gabriela Mistral. Santiago de Chile, 1946.
SAL 5020.17 Diaz Arrieta, Hernán. Historia personal de la literatura chilena. Santiago de Chile, 1954.
SAL 5173.2.21 Diaz Arrieta, Hernán. Leer y escribir. Santiago de Chile, 1962.
SAL 5068.2 Díaz Arrieta, Hernán. Memorialistas chilenos. Santiago de Chile, 1960.
SAL 5022.15 Diaz Arrieta, Hernán. Panorama de la literatura chilena durante el siglo XX. Santiago de Chile, 1931.
SAL 1573.4.100 Díaz Bolio, J. El mayab resplandeciente. Mexico, 1934.
SAL 5173.5.100 Diaz Casanueva, H. Réquiem. 3a ed. Santiago de Chile, 1958.
SAL 5573.2.31 Diaz Castro, Eugenio. Manuela. Paris, 1889. 2v.
SAL 5573.2.35 Diaz Castro, Eugenio. Una ronda de don Ventura Ahumada y otros cuadros. Bogotá, 1936.
SAL 1573.6.120 Diaz Covarrubias, Juan. Gil Gomez el insurgente; novela historica. Mexico, 1919.
SAL 1573.6.100 Diaz Covarrubias, Juan. Impresiones y sentimientos. Mexico, 1857.
SAL 1573.6.12 Diaz Covarrubias, Juan. Obras completas. 1a ed. Mexico, 1954.
SAL 1573.6.110 Diaz Covarrubias, Juan. Páginas del corazón; poesías. Mexico, 1859.
SAL 6142.48.800 Diaz Cuera, Miguel. Bibliografía de fray Vicente Solano. Cuenca, 1965.
SAL 9065.7 Diaz da Cruz, E. Pequeña antologia de cuentos brasileños. Buenos Aires, 1946.
SAL 1573.7.100 Díaz de Léon, Rafael. Por los pobres. Hermosillo, 1921.
SAL 1573.7.110 Díaz de Léon, Rafael. Semídiosa, prosas romanticas. Mexico, 1923.

Heroe de San Mateo. Pasto, 1914.
Teatro: El pretor. Bogotá, 1967.
Teatro. V. 1,3-4- Bogotá, 1963- 3v.
itmos de libertad; sonetos.

m. La voz del torrente. 2a ed. Santiago

Tipos de la Habana. Habana, 1895.
González, O. Collection of plays. 9 pam.
io. Crónicas de Altocerro. Santo

SAL 3173.5.700 Díaz Lozano, Argentina. Enriqueta and I. N.Y., 1944.
SAL 3173.5.102 Díaz Lozano, Argentina. Peregrinaje. 2a ed. Guatemala, 1955.
SAL 3173.5.100 Díaz Lozano, Argentina. Peregrinaje. Santiago de Chile, 1944.
SAL 4705.89.800 Diaz Machado, P. Nataniel Aguirre. Buenos Aires, 1945.
SAL 4773.23.120 Diaz Machicao, Porfirio. Cauce de palabras. La Paz, 1967.
SAL 4773.23.100 Diaz Machicao, Porfirio. Cronica de cronicas. La Paz, 1963.

WIDENER LIBRARY SHELFLIST, 21

CLASSIFIED LISTING BY CALL NUMBER

SAL 4231.5 Echagüe, Juan P. Teatro argentino. Madrid, 1917.
SAL 4231.8 Bianchi, A.A. Teatro nacional. Buenos Aires, 1920.
SAL 4231.10 Rodriguez Acasuso, L. Del teatro al libro. Buenos Aires, 1920.
SAL 4231.12 Echagüe, Juan P. Un teatro en formación. Buenos Aires, 1919.
SAL 4231.12.12 Echagüe, Juan P. Una época del teatro argentino 1904-18. 2a ed. Buenos Aires, 1926.
SAL 4231.12.15 Echagüe, Juan P. Le théâtre argentin. Paris, 1927.
SAL 4231.13 Ordaz, L. Breve historia del teatro argentino. Buenos Aires, 1962-63. 8v.
SAL 4231.14 Bastardi, Francisco. Yo también con mis memorias. Buenos Aires, 1963.
SAL 4231.15 Blanco Amares de Pagella, Angela. Nuevos temas en el teatro argentino. Buenos Aires, 1965.

SAL 4232 Latin American literature in Spanish - Argentina - History of special forms - Drama - Local

SAL 4232.1 Bosch, M.G. Teatro antiguo de Buenos Aires. Buenos Aires, 1904.
SAL 4232.1.3 Bosch, M.G. Historia del teatro en Buenos Aires. Buenos Aires, 1910.
SAL 4232.1.10 Castillo, C. Historia de los orígenes del teatro nacional argentino y la época de Pablo Podesta. Buenos Aires, 1929.
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as a whole, e.g., counts by class, by language, by place of publication, by date, as well as counts of serials, monographs, and volumes. Many of these statistics have already been obtained from the converted classes and used for management purposes.

The general research value of the bibliographical data contained in large research library catalogs has already been recognized and exploited to some extent by Dolby, Forsyth, and Resnikoff.[9] They have used data from one of the published volumes of the Widener shelflist and are currently working with the computer tapes of other classes.[10] Their views on the statistical uses of catalogs in machine readable form have been summarized as follows:

> Library catalogs contain a wealth of information about the historic development of the many fields of human endeavor and the interrelations that bind these activities. Mechanization of the catalog permits exploitation of this information by workers in many fields of research. Analysis of the same information can greatly assist librarians in studying their own collections and in managing the acquisition of materials for the library. Many studies of this type can be conducted on random samples of the catalog, though more detailed work requires access to the entire collection in machine-readable form.[11]

Conclusion

In 1968 this author concluded a description of the shelflist conversion project with this statement:

> As it now stands, the Widener shelflist program, like many other present library computer systems, is regarded as an interim system designed to extract the maximum return from a simple existing bibliographical record of the contents of the Library. It is expected that in time the system will become obsolete and the imperfect shelflist entries will be superseded by standard bibliographical records in the emerging Library of Congress MARC II format. . . . The expectation is that a central bibliographical agency will convert and distribute these entries. It seems reasonable to suppose, however, that this conversion effort is still some years in the future and that, in the meantime, Harvard will have realized a satisfactory return on its investment in converting an abbreviated bibliographical record.[12]

Developments during the two years that have passed since that statement was made only serve to confirm this brief assessment of the program.

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GILBERT W. FAIRHOLM

Essentials of Library Manpower Budgeting

Libraries in state-supported institutions find their quest for legislated funds increasingly competitive. New devices are needed to substantiate their claims for higher budgets. To meet one of these needs, the State University of New York has prepared a library manpower budget formula for its several campuses by developing weighted standard times for accomplishing library operations in various kinds of institutions and correlated with various library characteristics. The rationale and methodology of the formula are described. This paper was read to the New York Library Association, College and University Section, in Rochester, on May 3, 1969.

BUDGETING FOR HIGHER EDUCATION in state-supported institutions presents unique problems of policy and methodology. State institutions are dependent on the largess of the legislative body for the bulk of their financial support, and like other state supported public programs, such as welfare and health, must articulate their needs both in terms of academic programs and in a format understood by the governmental budget office.

The need for state budget support has been increasing exponentially since 1945. Larger enrollments, expanded functions, inflation, and broadening of the educational objectives of individual institutions are typically part of the management dilemma of harassed university administrators. Legislators find their involvement with allocation of limited resources, including the exploding higher education needs, a frustrating one. Their concern has typically been expressed in terms of requests for more detailed "justification" of academic budgets, and to more precise, quantifiable, objective data and methodology.

Library administrators have been caught in this squeeze. Often they have been hard-pressed to produce information in quantitative terms that at the same time reflected accurately their operations, activities, and needs. The quantitative data they have produced has led to the development of formulas of various kinds to consolidate objective measures of performance. Along with benefit-cost analysis and related techniques, these formulas provide both university administrators and state legislatures with a common language and a common knowledge-base upon which to negotiate needed program budgets in an ever-increasing competition for limited resources.

A formula basis for budgeting in university libraries has many advantages. Formulas are simple and direct, and they emphasize critical measures and provide an objective method of relating one campus to others within a state higher-edu-

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cation complex. They reduce the bulk of paper needed, focus on key issues, facilitate comparisons from campus to campus and from year to year, and reduce the element of risk in decision-making (risk of making mistakes and risk of producing conflict among competing elements).

These advantages, however, are relevant only insofar as the formula adopted reflects accurately the real-world situation at campuses. The "multiversity" is becoming the norm in state-supported higher education, and differences among campuses in terms of basic descriptive characteristics must be built into the formula "model" if it is to be of use in a complex multiinstitutional university. Enrollment differences in the academic program-mix, graduate and honors programs, special research goals, and other descriptive characteristics of individual campuses must be considered and properly accounted for in the development and use of budget formulas for higher education libraries. The advantages of a formula that does account for these variables are obvious.

This discussion will focus on a formula basis for library manpower budgeting. Library manpower can probably be correlated to quantitative measures more easily than any other factor of library operation. Especially in large-scale, multicampus academic institutions, library staffing presents problems of rationalization and equality that require some references to "standards" or formulas, to some common ground upon which valid decisions and comparisons can be made. When standard-setting authorities in the university fail to set standards in quantitative terms, budgeting authorities are compelled to do so. The resulting standards usually have the virtue of simplicity, but they often fail to meet the real needs of both the institution and the central management.

A unique joint effort at standard-setting for library staff has been conducted by the New York State Division of the Budget and the State University System (SUNY). Formulas to assure adequate staffing for the burgeoning libraries were seen as the logical solution to this problem. However, formulas had to be developed which recognized widely different organizational and procedural characteristics of over thirty campus libraries, and which accommodated the decentralized management philosophy of SUNY.

As a first step, available rules of thumb and formulas developed for use in other libraries in the United States were analyzed.[1] They were found to be unacceptable for New York State purposes because of the unique place of libraries in the rapid growth phase of SUNY libraries. Accordingly, an attempt was made to develop formulas which accommodated the key variables of libraries in the system. The result, while admittedly not the last word in formula-based library manpower forecasting, provides a quantifiable basis that could resolve many key staffing decisions in this area.

Essential Aspects

Essentially the formula which was developed relies on a correlation of work effort in libraries to five forecastable characteristics (or "descriptors") of an academic library. These five descriptors include holdings, acquisitions, full-time equivalent users, headcount students, and full-time equivalent faculty and selected professional staff of the university. Work effort was defined by reference to an abstract prescriptive model that utilized essential library functions and quantified output in a series of "standard times" related to each unit of the five characteristics. Totals of these five characteristics and their standard output units can be forecasted for planning and budgetary purposes and to-

gether are indicative of library activity.

The library descriptors reflect two characteristics—holdings and clientele. An academic library's manpower requirements are directly related to the size, character, educational goals and mission of the institution it serves. These institutional characteristics are reflected in several quantitative factors that describe the library:

1. *Holdings*—In any library, the size of the collection directly affects staff. Stated simply, large libraries require more staff to perform tasks directly related to books on shelves than small libraries.
2. *Acquisitions*—Acquisition of new materials has a direct impact on the volume of technical services. The larger the number of volumes added, the larger the staff requirements.

The larger the potential clientele of the library, the more staff is required to service it. In academic libraries, users are defined as students, faculty, staff, and community. Users affect the library on three levels.

3. *FTE Users*—The total student populations of the institution served by the library (including extension programs) equated to full-time equivalent students (FTE) plus the full-time equivalent faculty users constitute a user category to which significant library functions are directly related.
4. *Headcount*—The total number of actual students enrolled in an institution affects the extent of library services needed. Whether a student takes one course or a full academic course load, his potential use of certain library services is the same.
5. *Faculty and Staff*—Often the academic faculty and the university professional-level staff are ignored as potential users of the libraries resources. These individuals actually place identifiably special loads on the resources of the library and should be specially considered in any accurate description of library users. Implied in these characteristics are the academic and program faculty, and the scope of curriculum and degree programs, which help describe the institution itself and, therefore, affect the library.

For comparative purposes, these five characteristics most accurately describe the nature of the library. The character of the holdings may also be important; but, except for certain obvious situations (foreign language collections, for example), size of holdings is a more realistic basis for comparison of library manpower needs.[2] Also, the bulk of most collections is represented by traditional holdings. More importantly, it was found that each of the common library functions was directly relatable to one of these five characteristics.

Reference has been made to the relationship of the descriptors and the common functions of libraries. The functions of library staff (both professional and nonprofessional) that make up the business of librarianship were synthesized in this study and a listing was developed that represents the central nature of library activity. Since this listing emphasized *what* must be done in academic libraries, rather than *how* it is done, it was possible to ignore the difference in organizations and procedures of individual libraries and thus deal with the heart of librarianship, not its outward technique.

In order to produce this kind of a listing of intrinsic library functions, a model of library operations was first developed. This model, an abstract representation of library operations, focused on the essential functions and responsibilities of libraries, and was displayed in a series of linear flow diagrams. These flow diagrams related activities and tasks necessary to achieve certain events or conditions conducive to processing

books or responding to user demands. These diagrams were validated by internal checks of consistency and logic and by a panel of senior library professionals.[3]

Units of Measure

Once developed and validated, the list of common library functions was used to prepare a list of 59 units of measure of library activity. These units of measure, reproduced in column 1 of Table 1, are the countable output of library activity and effectively clump the common functions into countable units.

There are fewer units of measure than there are library functions. This is because completion of one unit of measure may require library staff to perform several functions. Thus, the units of measure actually summarize related library functions. For example, when we say it takes x minutes to charge out a book, we really mean it takes a total of x minutes to charge out the book, place a slip in the circulation files, and, if necessary, renew the book and refile the slip. The units of measure then represent clusters of individual functions.

Unit Standards

Using the 59 units of measure as a framework, a median time (in minutes) to perform each unit of measure was developed statistically through a questionnaire and interviews. In order to relate similar facilities and make the statistics more useful, the libraries in the sample were broken down into three classes, corresponding to the different missions of SUNY libraries, i.e., universities, liberal arts colleges, and agricultural and technical colleges.[4] Separate standards were developed for each class.

To refine further the statistical data collected, a series of workshops of librarian specialists was held in which they were asked:

1. to refine the list of typical library functions and the units of measurable output;
2. to develop standard times to perform these key work load units of measure;
3. to modify, as necessary, these standard times, taking into consideration factors that go to make up a *good* library operation.

Throughout the workshops the emphasis was on producing high quality standards that reflect good librarianship and not merely "average current performance," that may or may not reflect good practice.

The statistical bases were used as a check against the standards and to relate developed standard times to current real-world situations in the libraries. As a result of these workshops, Unit Standard Times were produced which reflect (for SUNY at this stage of its development) the standard of performance of library manpower in terms of staff time (in minutes) per unit of output (see column 3 in Table 1). Separate standards were produced for each of the 59 units of measure for each classification of library.

Application Factors

It will be readily seen that Unit Standards alone are not sufficient for forecasting library staff needs. While they provide an effective measure of individual performance of a given task, they do not reflect total manpower needs since not all functions are performed for *every* book or for *every* potential user. The relationship between functions performed and manpower needs was mathematically derived by relating actual performance of specific functions to one or another of the five key characteristics isolated previously (i.e., holdings, acquisitions, FTE users, headcount, and faculty and staff). Common library functions were grouped according to these basic characteristics and a mathematical fac-

tor derived by dividing the appropriate output data (by class) by the appropriate key characteristics. Data used came from the sample of eleven libraries for which data were collected. The resultant factor represents the frequency with which a given function is performed on an average unit of each of these five characteristics. Column 2 of Table 1 lists these applications factors.

Weighted Standard Times

Once the standard time for performing a given function had been determined and the frequency of its application in the library to a given characteristic had been established, simple multiplication produced a "weighted standard time," or the average time required to perform the function (or cluster of functions) for each unit of each

TABLE I

Weighted Standard Times
CLASS I (Ag. and Tech.) LIBRARIES

(Column 1) Units of Measure: Function	Unit	(Column 2) Application Factor	(Column 3) Standard Times (Min.)	(Column 4) Weighted Standard Times (Min.)
Technical Services Standards—Based on Volumes Added				
Selection of monographs & sets	Titles	.759	3.0	2.277
Selection of series	Titles	.074	5.6	.414
Search of holdings	Searches	1.494	3.0	4.482
Typing of cards	Number typed	5.000	3.0	15.000
Typing of add-ons	Add-ons	.060	2.4	.144
Typing of cross-references	Cross-references	.100	3.0	.300
Revision of cards	Titles	.100	2.4	.240
		Total Weighted Time		120.348 min.
Technical Services Standards—Based on Total Holdings				
Inventory	Volumes	.906	1.2	1.087
Binding	Volumes	.015	18.3	.274
Withdrawal of materials from collection	Volumes	.017	15.0	.255
		Total Weighted Time		3.627 min.
Reader Services Standards—Based on FTE Users				
Guidance to reader	Referrals	6.116	1.0	6.116
Reference questions	Questions	6.790	20.0	135.800
Interlibrary borrowed	Number borrowed	.120	42.0	5.040
		Total Weighted Time		157.295 min.
Reader Services Standards—Based on Head Count				
Charge-outs of materials	Volume	6.993	2.0	13.986
Return of materials	Volumes received	9.154	4.2	38.446
Preparation of overdue notices	Overdues	1.141	7.2	8.215
		Total Weighted Time		60.647 min.
Reader Services Standards—Based on Faculty & Staff				
Abstract prepared	Abstracts	.050	15.0	.750
Bibliographies prepared	Bibliographies	.200	450.0	90.000
Interlibrary loans	Number loaned	.250	22.0	5.500
		Total Weighted Time		96.250 min.

of the five key characteristics. The total of all of these average times (i.e., Weighted Standard Times) indicates the staff time required for each unit for each of the five basic library descriptive characteristics. These totals, when multiplied by the forecast quantities of each characteristic for a given year, indicate the total staff time required for that library to perform routine library operations (see Column 4, Table 1).

Table 1 summarizes this data for Agricultural and Technical Colleges within the SUNY System in 1968. In column 1 the subdivisions list the units of measure isolated from all library functions. Column 2 shows the application factor or the average frequency of performance of a given unit of measure within SUNY libraries. Column 3 carries the unit standard time or the established time required to perform each unit of measure and column 4 has the weighted standard time or the average staff time required to perform each unit of measure in terms of each of the five key characteristics of a library. These totals constitute the standard requirement for library manpower for each increment of the five characteristics. Thus, for each unit of holdings, acquisitions, weighted users, head count, students and faculty and staff forecast by a library, the total staff time (in minutes) is shown as required to properly staff the basic functions of that library.

Administration

To this point library management has been left out of the data collected as a basis for the standard times. Administrative overhead for the total library has been considered separately. A percentage factor was developed from the statistical data and modified by the workshops to produce a management factor (or a manpower percentage ratio) for each class of library, i.e., I, university; II, liberal arts college; and III, agricultural and technical college. These administrative overhead rates are included in Table 2.

TABLE 2

Administration Standards—Based on Percent of Technical Service and Reader Service Times by Classification

Administrative Functions	Percentage of Total Library Staff Time Devoted to Adminis. Functions		
	Class I	Class II	Class III
Interlibrary cooperation Professional meetings Committee assignments Personnel administration: (recruitment, training) Budget administration Reporting and statistics Public relations Mail Control Computer services and applications Planning and management Other administration	20.18%	14.22%	10.00%

Formula

A simple formula has been created to relate this quantitative data in a meaningful way, and to facilitate budget forecasting for library staff. This formula will produce a figure that represents the total staff needs of a library for routine performance of library functions. The figure includes temporary services, staff, student assistants, and other staff members. The formula involves four steps.

1. Technical Service Man-Year Requirements (TS) = $\frac{Aa + Bb}{96{,}000 \text{ min.}}$
2. Reader Services Man-Year Requirements (RS) = $\frac{Cc + Dd + Ee}{96{,}000 \text{ min.}}$

Total Weighted Standard Times

Where:

Descriptors		*Class I*	*Class II*	*Class III*
A = Forecast Holdings	a =	3.627	2.768	2.437
B = Forecast Volumes Added	b =	120.348	120.831	142.258
C = Forecast Weighted Users	c =	157.205	120.308	165.167
D = Forecast Head Count Students	d =	60.647	139.214	207.517
E = Forecast Faculty and Staff	e =	96.250	148.156	174.174

Where:

X = % of TS & RS STAFF Required for Administration	20.81%	14.22%	10.10%

And Where:

Number of minutes per man-year = 96,000
(one man-year = 1,600 hours × 60 min. = 96,000 min.)

3. Administration Man-Year Requirements (Adm) = S (TS + RS)
4. Total Library Man-Year Requirements = TS + RS + Adm

Limitations of the Formula

It must be kept in mind that the formula represents staff needs for routine continuing library functions and not necessarily for the total activity of a library. As with any standard or formula methodology, this method of determining library manpower is useful only for those operations common to all libraries in the SUNY system. Unique features of an individual library must be considered separately from the formula.

Analysis will show that a few library operations have been omitted from the units of measure. Unique physical characteristics of the individual library and special programs of the library or the academic institution also affect library operations and therefore staff needs. These factors, described in more detail below, may require staff in addition to the formula computations. Nevertheless the formula was formed to reflect 85 to 95 percent of all library functions in SUNY and therefore provides a valuable and highly efficient tool for both analysis and comparison of libraries.

Special Functions

A few library functions do not relate directly to any one of the five key characteristics identified. They should, of course, be reflected in final requests for library manpower, but they must be justified outside of the formula technique. Some of these functions are common to all or most libraries while others are found in only one or a few institutions. Examples include: machine maintenance and operation, reproduction of general materials, selection of audiovisual materials, and security guard functions.

Unique and unusual physical characteristics of the environment may have an impact on library manpower needs. Factors which may require manpower beyond mere output levels are: several manned service points on different floors or in different buildings, branch or divisional libraries, and unusual or extensive hours of opening.[5]

Special programs of the library may

require staff beyond the formula levels. These include: responsibility for audiovisual materials, special collections, and special research facilities.

The academic programs of the parent institution generate activities in academic libraries. Unusual programs and programs not found in other institutions may occasionally generate an unusual library manpower need. Among those to be considered are: extraordinary foreign language/subject matter programs and unusual research programs.

These unique or extraordinary circumstances may require separate justification, and when approved will necessitate increases in the formula staffing patterns. The flexibility thus assured protects individual libraries from a strict uniformity of staff that would stifle effective response to special and evolving situations both in librarianship and in the parent institution. Given this ability to deviate from formula standards, the standards themselves become more meaningful as a tool in library manpower determinations for higher education in the twentieth century.

The library is both an educational institution and a business operation. Management of the library must include evaluation of performance, the fulfillment of responsibilities, the accomplishment of purposes, the effective use of available resources, and the attainment of long-range objectives. These management activities must be interwoven in the constant process of serving the reference and research needs of the university. A formula-based realistic and flexible manpower forecasting system such as the one described here facilitates both academic and management goals in the library and within the total university complex.

References

1. Examples of these rules of thumb include the American Library Association "standard" of budgeting for libraries as "five percent" of the total university budget. More specific rules of thumb for staffing had been used in certain areas of library operation. For example: a cataloger can process approximately 800-850 books per year. While they may be pertinent to a specific library or case in point, there is no justification, statistical basis or other rationale, that would support or substantiate their use in the SUNY library system or elsewhere.
2. A few library functions, while common to most libraries, showed no direct correlation with one of the five key characteristics. (Reproduction of general materials is an example.) These library tasks are excluded from the formula and must be included as a separate treatment of any unique aspects of the total collection.
3. The Chancellor's Advisory Library Committee reviewed and modified early drafts of these models. Throughout the study, librarian specialists participated by completing questionnaires, discussing their operations with the team, and attending workshops.
4. Library studies were analyzed according to ten descriptive characteristics: holdings, acquisitions, students, total users, faculty, academic programs, ILL materials borrowed, ILL materials loaned, bibliography preparation, and circulation rates. When the characteristics for each library were arranged in rank order, they clustered into three groups that reinforced and verified the

present groupings of SUNY libraries according to institutional class—i.e., agricultural and technical colleges, liberal arts colleges, and university centers.

5. Under the formula a certain level of manpower can be established based on output or productivity of library staff. Conditions like those shown may require an additional segment of library staff time merely to man an open station. The incremental difference here must be computed in addition to the formula. For example, a reference station may require, on the basis of output forecasts, five man-years. The policy on hours of opening mandates that the reference desk be manned for a total of six man-years of time. The one-man-year differential is required on the basis of the policy of hours of opening, not on work load, and should be justified accordingly.

Letters

To the Editor:

As the person principally responsible for the "network of acquisitional interests" and the chief advocate of the extensive blanket and approval procurement arrangements at Stanford, I feel constrained to comment on Mr. Rouse's article "Automation Stops Here" (*CRL*, May 1970).

I shall not speculate at length on the reasons for Oklahoma State University's unhappy experience with these plans. The comparatively modest intake of books (for 1968/69, a gross of 42,560 volumes and a net of 40,913) and the subject concentrations indicated by the degrees granted and the course offerings in the catalog suggest that any blanket or approval services would have to be governed by very stringent subject criteria; since these criteria are not described in detail, it is impossible to judge whether they were or were not appropriate. Evidently the dealer's service was considered extremely unsatisfactory; again, it is impossible to guess why, if the University's criteria and handling arrangements were well organized. Stanford's experience with its procurement plans, which are based on carefully formulated and detailed schedules of criteria for inclusion and exclusion, and are constantly monitored by library staff, are generally regarded as highly satisfactory to both faculty and staff. In fact, they are one area of library activity which everyone at Stanford is anxious to protect in a period of financial stringency.

It is of cardinal importance to correct one misapprehension regarding these arrangements, namely, that the library must in every case be "willing to relinquish the selection responsibility to an outside party." This *is* indeed the case with blanket orders, which are therefore generally appropriate only for narrowly defined fields in which the library wishes very heavy coverage, or for types of material which cannot efficiently be obtained in any other way. Examples are U.S. and state documents, UN and OAS publications, materials obtained from CILA and LACAP, and books in highly specific subject fields in which the university has heavy commitments. Of course very large libraries like the Library of Congress, which have extremely broad obligations, can maintain blanket orders on a much more inclusive scale than most university libraries. In a sense the mention of Stanford's seventeen plans by Mr. Rouse is misleading, for this figure includes all these arrangements, many of which are common to most university libraries of any size.

The real problem comes in the masses of American and English imprints, and publications from high-production countries like Germany, issued by trade and university presses. The rationale for the approval arrangement here is that the dealer presents to the library a selection of published materials which he chooses in accordance with a carefully drawn schedule of criteria; and from this dealer's selection the librarians, with such help as they require from faculty, choose those books to be incorporated in the collections and return the rest. The dealer does *not* make a final selection; he merely offers to librarians and others on the campus an opportunity to examine the books themselves before buying—which appears to be a considerably more effective way of judging them than to select from citations, as is done with LC proof slips or *Publishers' Weekly* entries. In fact, every book accepted at Stanford from an approval shipment is examined before purchase, often by several librarians. Mr. Rouse's feeling that too much time may be given to reading prefaces and tables of content, and to skimming, seems a poor argument, if book selection really means bringing an intellectual judgment to bear on a particular book.

This idea of selection from the books is by no means new. C. E. Walton at Harvard suggested some thirty years ago that

publishers ship all new imprints to his department for examination and possible purchase. I do not believe that anything came of the scheme, but the idea was the same. And approval plans are an old story now—Stanford came late to this device. Ideally, faculty, library staff, and students ought to be able to scan the entire universe of scholarly publishing, to select personally those works that should be in the library. In fact, no bookstore can possibly furnish such opportunities, and the approval plan is merely an attempt to bring the bookstore stock of most interest to the University into the library in manageable quantities, so that the books can be examined at leisure, though it is unfortunately not possible to arrange regular faculty or student review of all possible purchases.

It is an illusion to suppose that such plans can do the work of competent book selectors. Stanford's development of extensive blanket and approval order plans coincided with the growth of the curatorial system in the University Libraries (it had previously existed in the Hoover Institution) and the assignment of specific subject specializations in the General Reference Department; it already existed in the branch and departmental libraries. Of four curators on the UL staff three have Ph.D. degrees and one is working on his dissertation; of two on the Hoover staff who also work for the University Libraries, one has his doctorate. These people all have broad language and subject responsibilities; the four reference librarians and twelve branch librarians who act as subject experts in more limited fields (e.g., English and American literature, Art, Education, Music, Chemistry, Physics, etc.) have other professional duties, but we believe at least a master's degree in the subject is very desirable. These members of the University Libraries staff, together with the librarians of the "coordinate libraries" (Hoover Institution, with six curators; and the Law, Medical, Business Administration, Food Research and Linear Accelerator Libraries) form the "network of acquisitional interests" to which Mr. Rouse refers. The Associate Director attempts to coordinate their work to prevent unnecessary duplication of materials and gaps in the collections, and to facilitate communication and discussion of common problems.

If these librarians are to serve faculty members effectively in book selection, they must cultivate close relations with the departments they serve, in order to be alert to their interests and to create confidence among the faculty that their needs are understood. For this reason we believe the professional library training of curators, who have few administrative duties, to be of minor importance; scholarly interests and attainments, and the ability to establish sympathetic relationships with scholars are of the greatest importance. Since the Undergraduate Library has its own selection procedures, the curators and many of the other selectors concentrate on the research collections, but they are frequently called upon to advise and assist faculty and students, both graduate and undergraduate, to whom their special knowledge can be helpful. Several have done teaching in the past, and one will serve as a faculty member at one of the overseas campuses within the next year. Each curator has two assistants with language and subject competence.

Mr. Rouse found that the dealer sent many books of doubtful value and missed many important ones. The first problem should have been avoided by careful preparation of criteria and careful examination of the books before acceptance, though if the dealer is incompetent, no amount of care by the library will obviate a troublesome and perhaps impossible rate of return. I should so describe the 50 percent Mr. Rouse mentions. The second problem is of course always a danger. At Stanford it is handled by careful scrutiny of the *Publishers' Weekly, British National Bibliography, Oesterreichische Bibliographie, Deutsche Bibliographie,* and *Das Schweizer Buch.* Copies of these are marked by the dealer to show books sent; the librarians—generally seven or eight in number—who examine them mark other titles which should be in the library. These are searched to avoid duplication and Xerox copies of the pages carrying wanted titles are sent to the dealer as orders. This permits the library to check new reprints (excluded from all blanket and approval arrangements) for searching, so that they are not

duplicated; and it brings books in subjects in which Stanford is so selective that they are specifically excluded from coverage—agriculture, theology, etc. In these, and in subjects in which the library lacks high-level competence, the library's selector is expected to consult frequently with faculty members regarding proposed purchases of both new and old imprints. This is currently the case with Oriental religions and Etruscan linguistics, among other subjects; here close and cordial relations with faculty and students working in the field are essential.

Second-hand lists and lists from countries like Israel, India, or some African nations, for which publications often do not appear in the usual media, must of course be given special examination; and the same is true of certain subject sources like the *Exchange Bibliographies* of the Council of Planning Librarians and *PAIS*. LC proof slips and publishers' announcements are routed to subject specialists for information and as a means of catching important materials which might otherwise escape; but no title which is known or presumed to appear in any of the checked bibliographies mentioned above, or to be received on blanket or approval order, is to be searched again, unless special discounts or other particular circumstances make it advantageous. If we miss a few books that we ought to buy, it is unfortunate; but a large-scale acquisition program cannot be operated on the basis of multiple searches if they can be avoided. Of course individual orders are still required for many publications, new and old, that are not obtainable on blanket or approval orders. The latter will only supply current imprints, and not all of those. Here again it is necessary to understand what can and what cannot be expected of them.

As to how many books Stanford or any other large university needs, this is a question that can be debated indefinitely without reaching any conclusion. There is no doubt that a large part of a research library is seldom if ever used. The problem is to identify accurately the comparatively useless portion. A daily examination of interlibrary loan requests from other libraries, and from Stanford to other libraries, to identify important lacunae, has convinced this observer that prediction of faculty and student needs is indeed a dubious enterprise. A desperate search by a faculty member or graduate student through three or four or more libraries for a title which he needs is by no means unusual. During years of inadequate book funds Stanford was cursed with a "buy-it-when-someone-needs-it" policy, and as a result it now spends vast sums on out-of-print books, reprints and microforms, many of them specifically requested by faculty or students. With fifty-eight departments offering doctorates (excluding M.D.'s and J.D.'s), and concentrations within these departments totalling several hundred (ten in History alone) we must try to obtain materials while they are yet in print for thousands of dissertations yet unwritten, faculty members not yet appointed and perhaps not yet born, and new developments and emphases within subject fields that cannot be foreseen. Is it possible to do this effectively? We do not know. We do know that it is difficult and that it requires the best brains we can find, working in close collaboration with faculty and students, and with dealers who make a serious effort to understand and meet the library's needs. We feel that most of ours do, and that dealers ought to be included as a fourth partner in the collaborating team of library staff, faculty, and students.

It would be rash to assert that every book bought by a large library is necessary to its clientele. On the other hand, there is an essential fallacy in the idea that because "the technology library at Northwestern University could be reduced by 75 percent and still satisfy 99 percent of its present users," it was a mistake for the library to purchase 75 percent of its books. The question is, were the books useful when purchased? An early treatment of an old subject, or the fourth edition of a book now in its fifteenth edition, or a bad book later superseded by a good one, may now be useless lumber in the stacks; but when they appeared they may have been essential. Stanford in recent years has withdrawn thousands of volumes, mostly duplicates, which were once heavily used. They are junk now, but they were a part of the essential teaching apparatus once. The

problem here is not the purchase of too many books; it is the high cost of removal from stacks, catalog, and shelf list. Last-copy withdrawal on a large scale is impossible.

Finally, I must reject emphatically Perry Morrison's assertions that the "automatic plan" builds an uncritical collection—it does so only if there are no critical librarians to monitor it; or that a library becomes dependent on one supplier and subject to the tyranny of his computer. Again, this can happen, but if it does, the fault lies with the librarian running the plan as much as the dealer. It need not and certainly should not happen.

As to the cost factors adduced by Mr. Thom, these are a matter of management and procedure. Stanford's acquisition librarians are convinced that our plans save us money, primarily because our dealers for the most part type process slips which serve also as invoices. The typing of thousands of orders, and their transmission by mail to the dealer have been eliminated. We find no substantial difference in the time required to obtain a book. We do find that a large proportion of the current books requested by faculty and students have already arrived.

I am convinced that Stanford could not, under present circumstances, maintain its current research strength through title-by-title selection from citations. I am convinced, too, that Stanford's system may well be inappropriate to other libraries, and that there may well be other selection and procurement systems better adapted to their needs. Our own procedures will without question change under the impact of automation, publishing innovations, and other factors. Mr. Rouse's article does a genuine service to acquisition librarians by recording the experience of one library with an acquisition plan that should, like all library operations, be subjected to severe and frequent scrutiny.

E. M. Grieder
Associate Director
Stanford University Libraries

Mr. Rouse responds: Mr. Grieder makes one important point better than I did in my paper. His staff of subject and language specialists, curators, selectors and bibliographers with advanced degrees obviously do an admirable job in working with procurement plans. My question is, are both the large staff *and* automatic procurement plans really necessary?

To the Editor:

I do not doubt that an unsuccessful attempt at setting up an "automatic-book-buying plan" (as reported by Roscoe Rouse in "Automation Stops Here: A Case for Man-Made Book Collections," *CRL*, May 1970) can be "a disappointing experience," however, I believe that approval plans are able to provide titles faster and at less cost.

If an approval plan is to be successful, certain conditions are necessary. A close working relationship between the dealer and the library to iron out wrinkles, and close communication between technical services and the subject bibliographers must exist. The program and its limitations must be understood by the subject bibliographers. It must also be understood that no acquisitions program is intended to be handled *in toto* by such a plan. Local operations and record keeping must be studied and sometimes even changed to handle best the new program which could consume a large percentage of the book budget.

Part of the onus for the failure of the program expressed by Mr. Rouse should not be put on the dealer. The bibliographic entry (cited as the prime reason for the failure of the plan) need not be problematic if depository cards and the order file are arranged by title. Whether the dealer's entry becomes that which is used by the Library of Congress is not crucial. The new Anglo-American code has made the choice of main entry extremely flexible, and the dealer ought not to be faulted when he cannot outwit LC. Now even librarians often cannot outwit the national library.

If 80 percent of the orders (prior to the plan) had indeed been made from proof slips, OSU must have lacked many current titles. The approval unit at the University of Colorado Libraries, which receives depository cards, locates, upon initial checking, proof for an average of only 32.3 per-

cent of the books which are received each week. Books with proof are sent on for cataloging when the week's shipment is taken down, and those lacking proof are shelved by control number. One of the multiple forms supplied by the dealer is filed in the depository file by title. Later the proof card and the multiform slip are forwarded to the holding unit, and the book is released to the Catalog Department. The need to recheck for proof periodically is eliminated, and the search for copy need not become, as Mr. Rouse fears, "almost a professional task."

The charge that selection from proofs is faster and more satisfactory is questionable. Subject headings describe the subject matter of a book, but they do not evaluate the treatment of the subject. What better way is there to determine this than by examining the book itself to achieve the quality which Mr. Rouse is concerned about?

The shortcoming of the plan, according to subject librarians, is attributed to the "narrow bibliographic base upon which the agent operated," and the lack of coverage in a certain subject is attributed to the dealer's not furnishing "materials from a number of U.S. publishers or from societies, institutions, and associations which issue scholarly publications." This statement reveals a lack of understanding of what an approval plan can and cannot do, and of the publishing industry. I would theorize that a large percentage (say 75%) of domestic titles of interest to an academic library are produced by as few as 400 publishers, and that less than one hundred of these publishers are responsible for the output of 50 percent of these titles. It should also be remembered that some of the nontrade organizations do not sell to dealers. Libraries must obtain such titles directly. Then there are publishers that do not accept returns. Such titles would be unreturnable, and the very principle of what an approval book is would be lost. It would be unfair to ask the dealer to send the book on approval and to be stuck with these returns.

It is only natural to be apprehensive in the beginning as to whether a title will be received. When in doubt, it is a simple matter to Xerox a copy of the request and to claim it against the plan. A full order packet need not be created—simply stamp the request "Anticipated on Approval" and file in the order file. Such a move would insure the receipt of the desired item and would serve in refining the specifications of the program. Eventually claims would become minimal.

Four months is not enough time to test any approval program. It may take four months to set it up, but to get the program to a point where the faculty and librarian can depend on it will take at least a year. The University of Colorado has a U.S. approval program with exclusions common to other academic libraries. Excluded are reprints, fiction, introductory textbooks, and agriculture. It has been in operation since September 1965. It is run by the Bibliographic Department with thirty hours of student help and about two and a half hours of a searcher's time per week. The operations include searching for proof, filing receipt slips, ordering added copies, checking serials and titles in series in serial records, displaying the current week's shipment for inspection, taking down the previous week's shipment, returning rejections and duplicates, and resolving whatever conflicts arise. The University of Colorado Libraries, like OSU, is organized on a divisional plan, and the subject librarians work with the faculty in collection development.

Harriet K. Rebuldela
Head, Bibliographic Department
University of Colorado Libraries

Mr. Rouse responds: I have always presumed that librarians are expected to determine main entries with reasonable accuracy and I cannot accept a philosophy which excuses librarians *or* dealers who cannot do so.

Miss Rebuldela undoubtedly misunderstands my use of 80% in stating the proportion of books ordered via proof slips. This percentage has nothing to do with the percentage of current titles ordered; the remaining 20% may well have been new titles ordered from equally current sources. I doubt it, however, since a major research library cannot exist on current imprints alone and we order heavily from o.p. and foreign catalogs, listings of periodical backfiles, etc.

Her proposals for means of obviating apprehension about whether or not a title will be received suggest more steps, more Xerox copies, more files . . . No thanks!

To the Editor:

Roscoe Rouse has done us all a service by calling attention to a number of problems connected with approval plans in his article, "Automation Stops Here: A Case for Man-Made Book Collections" (*CRL*, May 1970). However, when he cited "Book Selection in Academic Libraries: A New Approach" (*CRL*, September 1969), he misread our article—Ruth Adams and I were concerned only with retrospective collection building, and not with current acquisitions.

I would be among the first to agree that many of Mr. Rouse's points are well taken. I suspect that the most serious problem with approval programs is that the quality varies from vendor to vendor—or even from office to office for firms with regional offices—to such a degree that programs often bear little similarity to each other. Still, in spite of the difficulties, I think approval programs are a valuable adjunct to current acquisitions programs for most academic libraries. I say "most" because there are some libraries that cannot profit from approval programs. Small libraries, with budgets so limited that every book must be chosen with great care, should wait until critical reviews appear long after the date of publication, and a few of the largest libraries, that want every book on a topic of collecting interest regardless of quality, would probably benefit most from blanket orders. But for the majority, approval plans offer real advantages.

Much of the criticism laid against approval programs is based on unrealistic expectations, or rather, a lack of understanding as to what they can and cannot do. Most academic librarians today agree that they ought to acquire important new imprints as soon as possible after the date of publication, and getting current material to students and faculty with a minimum of delay has become an important goal for college and university libraries. The question, then, is how best to acquire current imprints, and three factors govern the choice of a current acquisitions program: (1) quality of selection, (2) speed of receipt, and (3) costs. It is against these factors that approval programs have to be measured, and advantages and disadvantages I have noted over several years' experience with such programs are as follows:

1. *Quality of selection.* Among the most vehement arguments against approval programs is that libraries abrogate their selection responsibility to a bookseller. Nothing could be further from the truth. The vendor sends books that fall within the library's scope of collecting, whereupon, with book in hand, librarians must decide whether it is good or bad and whether to keep it or return it. No book must be kept, and if librarians fail to return as many books as they should, this is not a failing of approval programs. A truly competent librarian can make a much better decision about a book after examining it than he can from a *PW* entry or an LC proof. A second criticism is that approval programs miss important titles. But whereas it is certainly true that approval programs do miss important titles, librarians using *PW* or proofs are not likely to do much better. The value of a book is not established until reviews appear—often a couple of years after publication—in scholarly and professional journals of the various disciplines. Any current acquisitions program, whether it uses an approval plan or not, should supplement original selections with additional titles selected on the basis of critical reviews.

2. *Speed of receipt.* Libraries that do not use approval plans frequently delay ordering until the book has been listed in *PW*, reviewed in *LJ*, or appears on LC proofs. Once selections have been made, additional delays are incurred in checking, typing orders, and waiting for the material to be supplied by the vendor. On the other hand, books received on approval are usually shipped as soon after publication as possible, and are in the library, waiting to be cataloged, by the time LC proof arrives. (Unfortunately, many books wait a long time for LC proof to arrive.)

3. *Costs.* Another common argument against approval plans is that they are costly. There is no doubt that better discounts

can be obtained, but whatever loss there is in approval buying is more than offset by a saving of staff time. A smoothly functioning program can save a library many hours of preparing order cards, bibliographic checking, and order typing.

There is another question that is close to the heart of this problem. This concerns bibliographic control. No single source will ever provide all the new titles a library requires. Most approval programs are limited to English-language trade books. Academic libraries must seek other sources for foreign, societal, and governmental publications and similar material. These must normally be ordered from specialized vendors.

In summary, approval plans are not without their drawbacks; no one will dispute that. But the real point that Mr. Rouse missed is that no single source will satisfy the current needs of an academic library. Approval programs are a valuable supplement to existing methods in that (1) they improve the quality of selection by enabling librarians to examine the books themselves; (2) they get new imprints into the hands of users more quickly; and (3) they save staff time spent processing orders.

Jasper G. Schad
Associate College Librarian
San Fernando State College
Northridge, California

Mr. Rouse responds: I went back to my red-underlined copy of Mr. Schad's article and read it again. The inference is still there that he refers to current and retrospective acquisitions alike. Not only I, but colleagues whom I questioned about the article also "misread" it. Nowhere does he suggest that the paper is concerned only with *retrospective* collection building.

Points two and three in the last paragraph, I suspect, should be given more introspection than is permitted. I do not agree with number two and as for number three, staff time may be saved in processing orders but an equal amount of time is required elsewhere in the process.

To the Editor:

Following are comments about two articles in the May 1970, *CRL:*

First, this writer wishes to underscore the statement in Dr. Hiatt's editorial calling for more service-oriented academic libraries, stimulating use of collections, not stopping at their mere acquisition. Evidence of the value placed on collection building appears in the laudatory write-ups in the literature, on the occasion of the arrival or departure of library heads of academic institutions. A career highlight is cited as the great growth of the library's collection or facilities during the subject's tenure there. During the past two decades of burgeoning enrollments and budgets, collection growth alone would hardly be a unique accomplishment in any academic library.

This next decade, with funds less free, at least at the outset, the measure of academic library accomplishment may necessarily be more in terms of service rather than in collection building. Facilities may well be designed to enhance service and use of the collection, but, as Dr. Hiatt stated, something still needs to be *done,* besides just being there.

Regarding the account by Mr. Rouse of Oklahoma State's experience with an approval plan, objective comments are difficult without a knowledge of the institutional situation itself. But the view of an outsider, however inaccurate, may at least give a different perspective. It seems, from the account of the near flawless selection routine in operation before the approval plan, that there may have been some inherent prejudgment of the dealer's ability to follow with as capable a performance. The reason for OSU's entering the plan was not too clear, especially if selection was being done so satisfactorily. One reason for entering approval plans is speed—to acquire books rapidly, and possibly to eliminate processing hang-ups. An approval plan, therefore, should also be judged on the basis of rapidity of receipt of books, and the speed with which they can be made available to the users. This factor could be difficult to measure, especially in so short a time; Mr. Rouse admitted that four months at OSU was possibly too brief to allow for complete fairness.

In the matter of bibliographic entry, which was cited as the main problem—could not some of this have been eased by

a different method of searching for LC copy? If proof slips, for example, had been filed by LC card number, incoming books, most of them bearing card numbers, could then be matched numerically, requiring no bibliographic expertise. Or instead of using the proof slips this way, the library might subscribe to one of the services providing indexes to LC cards by card number. (Admittedly, an extra cost consideration for the card index service is involved here.)

The routine at OSU for receipt of ordered books is described as fairly simple, when it comes to locating the slip in the orders-outstanding file. Yet there seems to be a gap in the explanation, in that the arrangement of the orders-outstanding file is not specified, nor the means by which the incoming book is matched to the card in that file. If it is alphabetical, and no copy of the order slip accompanies the book on receipt, a bibliographic search from the title page would seem necessary, the same as that for approval books searched against the depository file. If orders-outstanding is filed numerically, by preassigned order numbers, the matching by number need be no simpler than matching of LC card numbers between book and proof slip for approval titles. (Granted, some books will lack the number, and an entry search of the depository file would be necessary.)

Since bibliographic entry was a prime cause of failure of the experiment, possibly more experimenting to adjust for this contingency would have been helpful. Perhaps OSU tried to begin something new while still retaining too many old ways, and by not considering what other internal adjustments might make things run more smoothly.

Shortcomings on the part of the jobber were cited as another prime reason for failure of the plan. The complaints enumerated do give strong justification for its termination. But one wonders if the use of library selection and acquisition expertise on the scene at the jobber's establishment might improve his service. It was noted that company representatives visited the library. What would happen if a library representative were to go to the site of company operations? Librarians are so used to conducting their business under one roof, tied to collections and buildings, that such a proposal might seem ridiculous. Yet if a selection-liaison officer from the library worked with the jobber for certain periods of time, could a more effective routine be achieved? Obviously, the administration of such a plan could be a problem, and one can see a jobber throwing up his hands at the prospect of fifty liaison-librarians descending on him from fifty different accounts. If the jobbers and the librarians really want something which will work for the benefit of both establishments, though, such an innovative arrangement might be worth a trial with certain institutions which are desperate for a solution.

Throughout the account of the experience at OSU there seems to be the feeling that the library staff was never *really* ready to take the plunge, but always kept one foot on the shore. One would hope that the "we've always done it that way" syndrome is not beneath the surface of this candid revelation of a brief affair.

A. F. Schnaitter
USOE Doctoral Fellow
Indiana University
Graduate Library School

Mr. Rouse responds: In response to your last paragraph, we hope not too, Mr. Schnaitter, and we are reasonably confident that this was not the case.

Regarding the suggestion on the use of LC card number access to proof slips, I wonder if someone who has used this approach might enlighten us as to its advantages and/or problems. I should think we might lose more than we would gain.

To the Editor:

No doubt Peter Hiatt's recent editorial (*CRL*, May 1970) was intended to be provocative; in any case, I am provoked enough to respond. This remarkable point of view with respect to academic librarianship should not pass unnoticed.

Mr. Hiatt objects to a statement (recently made in a university library's annual report) which maintains that " . . . the principal business of a library is to acquire

books that are needed either currently or potentially." On the basis of this simple sentence, Mr. Hiatt mounts his charger to attack the academic librarian for his lack of social conscience and his apparent resistance to serving the academic community.

Mr. Hiatt's logic is curious, and his allegiance to the untested assumption worthy of note. He assumes, for example, that because only 2 percent of the members of the Adult Services Division of ALA are academic librarians, such librarians are not sufficiently interested in service. Given the same data, one might reasonably come up with other conclusions.

In recognizing a need for more aggressive librarians, Mr. Hiatt is responding to the mood of the time. At the moment, involvement is more fashionable than detachment. A sound historical perspective might suggest, however, that both detachment and involvement can result in contributions to the solution of social problems.

As to "the principal business of a library," Mr. Hiatt thinks it is "to stimulate the effective and efficient use of man's recorded knowledge with the ultimate aim of helping individuals and groups to deal realistically with and develop sound solutions to problems." This definition implies a limited and slanted view of a library's functions, as well as a narrowly pragmatic concept of human knowledge.

A substantial portion of every library's holdings is rightly and legitimately unconcerned with problem-solving or with social issues. The literature resulting from detached scholarship or aesthetic response may contribute to the solution of social or other problems, or it may not. It remains a valid and valuable expression of human experience.

On the whole, I prefer the definition of "the principal business of a library" which Mr. Hiatt rejects to that which he favors. Service is important. Involvement is important. What a library does has its importance. What is in the library is more important. Like all citizens, academic librarians have an individual responsibility to concern themselves with the social issues dominant in their time. As librarians, they also have a professional responsibility to make relevant library materials available to their specific communities. But the issues change and the generations pass away. The libraries remain as a continuing source for individual enrichment, expanding knowledge, and social renewal.

W. Royce Butler
University Librarian
Oakland University
Rochester, Michigan

To the Editor:

The editorial in the May 1970, *CRL* exposes anew the basic questions encircling the library's function in any social organization. Is a library a catalysis for maturity? If so, in what topics and for which patron? When we pose this latter statement as a query, we begin to dig into the subterranean paradigm containing the value judgments and vested commitments of humankind and their cultural apparatus. What does a library do with what it has?

Here, we start to speculate about societal capabilities and ideological potentials. But no matter what our attitudes might be toward the phenomenon of intellectual progression, facts do become archaic. Environments alter. And so, libraries must continuously strive to remain contemporary in structure and in knowledge while simultaneously circulating historical data to and from literary museums without ever disrupting the human niche.

Claude Hayden
Berkeley, California

To the Editor:

The article by Roscoe Rouse in the May *CRL* makes some good points in favor of selection by librarians, rather than for librarians. Margit Kraft's views (*Library Quarterly*, July 1967) are apropos in this context, as Mr. Rouse reminds us. Rouse and Kraft are among those who prefer a more selective kind of selection process, and to have that process re-humanized—carried out by the library staff instead of by dealers and agents. How effectively librarians can handle this vital function remains an open question; we cannot forget

the warnings in Lawrence Thompson's "Dogma of Book Selection in University Libraries" (*CRL*, November 1960). The issue may resolve itself on the basis of individual competence of the librarians charged with selection of scholarly materials.

How is your competence, gentle reader? This test will tell you all about yourself. Originally intended for national television presentation, it is offered to you apologetically in archaic printed format. For TV we needed a sponsor, and we couldn't persuade SRRT to pick up the bill.

The National Book Selection Test (Academic Librarians Section)

Test Begins Here: Time Allowed—
One Coffee Break.

1. Write here the name of your university. .....

2. Write here the name of the subject field in which you consider yourself most competent to select scholarly materials. .....

3. List five very prominent scholars in that field.

   Scoring: Take one point for each one you can address by his or her first name.

4. List three leading scholars in the field who teach in your university.

   Scoring: Take one point for each one you have had lunch with this year. Subtract three points for each one you have never met.

5. Aside from LC and NYPL, which five American libraries have the strongest collections in the field?

6. What five libraries outside the U.S. have the strongest collections?

   Scoring: Take one point for each American library listed which you have visited personally for the purpose of examining the collection in your field. Take three points for each foreign library visited for that purpose.

7. If you have not examined any of the ten leading collections just listed, give here the name of the most significant research collection in your field which you have examined:

   Scoring: If this answer is the same as answer #1, subtract two points.

8. Give the name of the most important book which surveys the literature in your field:

   Scoring: If this book is on your desk right now, take one point. However, if you have the library's only copy, subtract two points. If you have checked library holdings in it, add three points.

9. In what three languages, other than English, is the principal research literature of your field now being written?

   Scoring: Give yourself two points for each language you can read easily, and one point for each one you can manage somewhat. If one of the languages is Russian and you cannot decipher the Cyrillic alphabet, subtract three points.

10. In your library, approximately what percent of current book acquisition in the field of your competence is in the three foreign languages mentioned in #9?

    Scoring: no points for this one, but it makes you stop and think doesn't it?

11. Give the names of three book reviewers whose judgment you particularly respect (in your field) and the journals they write in.

12. Identify at least two, and more if applicable, "schools of thought" among scholars in your field.

    Scoring: two points for placing each of the reviewers in answer #11 in the correct "school" of #12.

13. List five principal English language scholarly journals in your field.

14. List five principal non-English language journals in your field.

    Scoring: Three points for every book review, five points for every article, you have had published in any journal cited in #13 or #14. Subtract three points for every incomplete file in your library of any journal named. Subtract two points for every journal named which you have taken home before the faculty could get at it.

15. List as many new journals of the field (first issued in last year or so) as you can think of.

    Scoring: Subtract two points for each one not yet received and shelved in your library.

16. Name a 1970 book of major scholarly interest in your subject.

    Scoring: Take two points if your library has it, processed and shelved. Take two more points if you have advised departmental faculty of its arrival. Add two points if you have read it, and three more points if you can talk about it. Subtract three points if it is in your office today, unprocessed, un-advised, and unread.

17. Have you attended any workshops or institutes in the subject field?

    Scoring: Two points each; four points each if you paid all your own expenses.

18. Do you have a desiderata file?

    Scoring: One point if yes. Extra point if you have added a title to it in past week.

19. Do you have a file of current dealers' catalogs?

    Scoring: One point if yes. Two points extra if you have checked desiderata against at least one dealer catalog in past week.

20. Citation game. Open any recent issue of a journal listed in #13 at random; turn pages until you come to a footnote reference. If the first item cited in the footnote is in your library or in your desiderata file, give yourself two points. Do the same with journals in #14, but count three points for each success.

Now add up your score. If you reached the highest possible total points (200), you are eligible for the grand prize: a weekend for two in any university library reading room in the world.

Guy A. Marco
School of Library Science
Kent State University

To the Editor:

I heartily agree with your proposal (Editorial in the March 1970, *CRL*) that middle-management level librarians in academic libraries be provided with opportunities for an administrative intern program in leading academic libraries. I would also propose that the library schools offering doctorates provide a similar approach. About half of our doctoral graduates have been going into administrative positions in college and university libraries. They should not go through the same degree requirements as those preparing to be library science teachers. Instead, their programs of study should include courses in management, human relations, computer science, higher education and at least a one-semester internship at a university library. Included also should be a dissertation project based on needed research at the academic library of their internship.

We at the School of Library Science at the University of Kentucky are working toward such a degree as one alternative of our doctoral program which is now in the planning stages.

Dr. George S. Bobinski
Assistant Dean
University of Kentucky

To the Editor:

After reading the article by Logan Wilson ("Library Roles in American Higher Education," *CRL*, March 1970), it isn't clear whether or not he is aware that *The Old Librarian's Almanack* is a hoax, dating not from 1773 but from 1909. It was

written by Edmund Lester Pearson and published by the Elm Tree Press in Woodstock, Vt. This very attractive volume was reprinted by G. K. Hall in 1962, as a Christmas keepsake, with a note in the back pointing out the hoax. But old hoaxes never die, as witness Mencken's bathtub hoax. Wayne State University's Howard Sullivan wrote an article about the Old Librarian and his Almanack, which appeared in Stechert-Haffner *Book News* (Jan., 1963) and *Library Journal* (Mar. 15, 1964).

John Neufeld
State Library Division
Department of Education
Lansing, Michigan

To the Editor:

The evaluation of Andrew Sarris' *The American Cinema* (Selected Reference Books of 1968/69, *CRL*, March 1970, p. 113-114) does not mention that this book has become for many "The one reference book you need by the TV set if you are addicted to late TV movies." Whether you agree or not with all of Mr. Sarris' evaluations of directors, the viewer previously faced with a jungle of four or five movies to choose from in that insomniac's joy (or sorrow) can now make his choice via the director rather than the movie star. Before Mr. Sarris, it was not easy to make a choice between Frank Borgaze (Three Comrades), Henry Hathaway (13 Rue Madeline), or Victor Fleming (A Guy Named Joe). Indeed, if Sarris has done anything for American cinema, it is the giving of the director his just place in an industry (and art) that overemphasized the movie star. The Directoral index has one shortcoming. There are no page references. One must go from the back of the book (index) to the front of the book (contents) to see if the particular director is analyzed. But, by that time the opening commercials are usually over anyhow.

Allen Cohen
Head Cataloger
John Jay College of Criminal Justice
City University of New York

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Recent Publications

BOOK REVIEWS

Mexico's Library and Information Services; A Study of Present Conditions and Needs. By Carl M. White. Totowa, N.J.: Bedminster Press, 1969. 106p. $5.50.

This slender volume is more than a simple recounting of current library conditions and needs in Mexico; it is also the author's *apologia pro vita sua,* and a fine one it is. Indeed, helpful though the book may be to the agency that commissioned it and to the nation that is its subject, its value may be even greater as a succinct and rational position paper on the essential role of libraries in national growth. The wealth of Dr. White's extensive experience in the activities of libraries in developing lands assures a level of credibility to the volume that is unlikely soon to be matched in another.

The first chapter, a general essay entitled "Libraries in the Building of a Nation," really carries one of the two major burdens of the book. In this reviewer's judgment, it deserves to be reprinted separately—it is capable of standing by itself—and distributed widely among advisors, civil servants, opinion leaders, industrialists, and others who find themselves involved in planning and implementing programs of national growth. The conceptualization of a rational plan for library development in a country, Dr. White argues logically, is possible only as an integral segment of general national planning.

"Nation-Building in Mexico" is the second chapter, and the second theme of the book begins here. In it the author examines the changing educational, professional, technical, and economic composition of Mexican society; speculates as to their future; and considers the role of libraries as both causes and effects of the changes. In Chapter 3, "Mexico's Library Capability," he appraises current levels of library service and examines critically the reasons usually given for their not having developed more fully.

Chapter 4 describes "Modern Library Service for Modern Mexico." Herein Dr. White outlines the characteristics of library service he feels are necessary fully to support present and future stages of Mexico's social development. In the fifth chapter he described "The Federal Government's Part" in library development, especially the establishment of a statutory body with both responsibility and authority to effect appropriate library services. The sixth and final chapter concerns "Manpower for an Emerging Profession."

The present study, together with Paul Bixler's *Mexican Library* (Scarecrow Press, 1968), was done for the Ford Foundation in October 1966. In the library community, it will be of considerable interest to Latin Americanists, to librarians concerned for the international aspects of their work, and to students of comparative librarianship. Most of all, however, it should stand for a long time as a model for librarians who find themselves involved in the development of library plans for other nations in the world where similar conditions and circumstances prevail.—*David Kaser, Cornell University.*

Caxton and His World. By N. F. Blake. New York: London House and Maxwell, 1969. 256p. $7.95.

William Caxton, the earliest English printer, has been the subject of numerous literary, bibliographical, and historical studies. Surprisingly, there has not been a major reassessment of his career since William Blades' *The Life and Typography of William Caxton,* a landmark work published in 1861-63. And so it is with special pleasure that we receive the excellent synthesis provided by N. F. Blake of Liverpool University, an accomplished Caxton scholar who has been writing significant articles for over a decade. *Caxton and His World* is both an exploration in biography and an evaluation of his literary attainments.

In the role of historical detective Blake moves deftly through the maze of scattered and incomplete records pertaining to Caxton's life. Blake has probably exploited Caxton's prologues and epilogues more imaginatively than any previous writer. Further, the narrative is measurably enhanced by the inclusion of summaries of past research and a selective bibliography devoted to works by and about Caxton. From the "meagre results" of his investigation Blake says that Caxton was born between 1415 and 1424 in Kent, of parents who belonged to the professional or merchant class. By the age of fourteen he was apprenticed to Robert Large, a distinguished London mercer. For almost thirty years Caxton lived in the town of Bruges, Belgium, where he became a prominent businessman and was involved in international diplomatic machinations. He did, however, find time to buy and sell manuscripts, a fact which refutes those who claim that Caxton abruptly decided to become a printer. In an attempt to still two bibliographical controversies, Blake concludes that Caxton learned to print in Cologne and that he taught printing to Colard Mansion, not vice versa. Returning to Westminster in 1476, he printed his first item in England that same year.

Blake continually reminds us that Caxton's mercantile experience influenced every phase of his publishing operation, from choice of material to editorial practices, and that in evaluating Caxton, many critics have been guilty of applying contemporary standards to an earlier age. Taken in this light, Caxton's work as editor, translator, and prose stylist falls into a more realistic perspective. Caxton reflected rather than molded the literary fashions of the time as evidenced by his many translations of French chivalric romances and the issuance of many devotional books. Because most of Caxton's projects were executed under the patronage of the courtly estate, texts were selected to gratify their tastes. He was not willing to sacrifice the financial security of a safe market to become a literary pacemaker. The publication of classical authors was left to mainland printers, probably as an economic expedient. Caxton's respect for textual authority was sometimes cavalier and his translations were often insensitively literal. For example, Caxton did not select the best available manuscript for his edition of Chaucer's *Canterbury Tales* and he considerably modified Malory's *Morte d'Arthur* during editing.

In a final, illuminating chapter on the man and his reputation Blake looks at Caxton criticism over five hundred years and offers his own appraisal. The Caxton critical tradition has centered around antiquarians and men of letters. Generally, historians have elevated Caxton because of his unchallenged position as England's first printer while many literary critics have complained that his books lacked linguistic elegance and catered to the aristocracy. Gavin Douglas, a sixteenth century translator of *The Aeneid*, wrote that "I red his wark with harmys at my hart." Shifting blame from the man to his times, Edward Gibbon pronounced: "In the choice of his authors, that liberal and industrious artist was reduced to comply with the vicious taste of his readers." Blake's ultimate judgment is cautious and detached. Caxton was a consummate businessman whose greatest achievement was the introduction of printing to England, but whose books mirrored rather than transformed the period. By way of confirmation, Caxton beckoned with honest charm in his advertisement: "late hym come to Westmonester into the Almonesrye at the Reed Pale and he shal have them good chepe."

Blake's estimate of Caxton is quite fair, if reserved. He tends, however, to underrate Caxton's versatility as a printer-publisher and his contributions to the enrichment and codification of the English prose language. It is perhaps unfair to criticize an author for not writing about an aspect of his subject that he has explicitly exempted from consideration, but it is nevertheless regrettable that there is no discussion of Caxton's typography and its relationship to the history of printing. And since Caxton was an important transitional figure between scribal and typographical culture, we need to know much more about the impact of his printing activities on Western society and thought. Blake has written an impressive biography and literary critique that will very likely come to be regarded as a seminal contribution to Caxtonian scholar-

ship.—*Arthur P. Young, State University of New York, College at Cortland.*

Library Science. By John Farley and Stanley Lewis. New York: College Notes, Inc., 1969. 101p. $2.95.

In a brief preface to *Library Science,* it is stated, "We would like to thank the numerous college faculty members throughout the country who have requested that this type of book be published to supplement the textbook in their classes." Apparently the purpose of this publication is to supplement instruction in the use of libraries at various academic levels. It cannot be questioned that there is a need for good publications to accomplish this purpose.

However, it is regretted that *Library Science* is the publication that has evolved to meet this need, for this publication presents libraries and librarianship in a negative and frequently erroneous manner. It could do nothing but discourage students from considering the field of librarianship as a career.

Even though the copyright date of the publication is 1969, it is assumed that the manuscript was completed early in 1967. All statistics given are for 1966 or earlier and all bibliographies and suggested reading lists (with the exception of one entry) are dated 1966 or earlier. As a matter of fact the majority of the entries in the suggested reading lists are in the 1940s and 1950s. In discussing reference books and encyclopedias, generally no dates or editions are given. However, it is unfortunate that when some editions are given the latest edition is not identified, as new editions have appeared since the preparation of the manuscript. It is also regretted that there is minimal discussion of standards for various types of libraries. Those referred to have frequently been superseded.

In an attempt to cover the total field of librarianship in this publication, which unfortunately is titled *Library Science,* the brevity of statements frequently causes misunderstanding or results in statements which are misleading or redundant. Brevity has not been a blessing in this publication. I quote one paragraph completely to illustrate this point. "*Environment,* a combination of many factors, affects reading. The availability of reading matter is an obvious environmental factor affecting reading." (p. 69). Many other examples of verbiage with little meaning could be given.

Library Science is a typical "College Notes" publication. It is paperbound, with very cheap paper, frequent typographical errors, both in the text and in the suggested readings. If it were current and up-to-date, if all statements were correct, and if the challenge of contemporary librarianship and the excitement of the changing scene of librarianship due to the educational explosion and the related problems of information organization and control were conveyed to the reader, this volume might have had merit.—*John T. Eastlick, University of Denver.*

Books for Junior College Libraries; a Selected List of Approximately 19,700 Titles. Comp. by James W. Pirie. Chicago: American Library Association, 1969. 452p. $35.00.

Intended primarily for transfer, or liberal arts programs, with emphasis on support of curriculum, *Books for Junior College Libraries (BJCL)* " . . . endeavors to present, as any good college library collection does, a microcosm of the world around us . . . [but] does not attempt in any way to cover the vast area of terminal and vocational courses offered in junior and community colleges." (Preface.) Limited to books, it is a good selection of titles backed by substantial authority. The method by which it was compiled is logical—start with the shelflists of three outstanding junior college libraries, winnow the best from these, and add significant new titles. This procedure, plus extensive use of authorities from the various disciplines, points to a quality product.

This is a quality product, but is it the product which is needed? A comparison of *BJCL* with *Books for College Libraries (BCL)* reveals that, if pre-1964 titles are discounted, there is an overlap between the two of more than 70 percent. It will be remembered that *BCL* purposely omitted

pre-1964 imprints in order to avoid duplication of *Choice*. About 27 percent of the titles in *BJCL* were published after 1964; most of this group are doubtless also listed in *Choice*, or the *Choice Opening Day Collection*. Since *BJCL* " . . . does not attempt in any way to cover the vast areas of terminal and vocational courses offered in junior and community colleges," we may then ask —why was this bibliography prepared? Why couldn't *BCL* and *Choice* serve as selection guides for the liberal arts "core," and *BJCL* concentrate on just those terminal and vocational areas to which the junior and community colleges pay particular attention? Margaret Egan and Jesse Shera in their article, "Toward a Foundation of a Theory of Bibliography" *(Library Quarterly* 22:125-137, 1952), cited two concepts of bibliography: the microscopic, in which each bibliography exists entire unto itself and is its own justification, and the macroscopic, in which each bibliography is a functioning part of a whole system. *BJCL* is yet another bibliography conceived in microcosm which cites excellent titles, most of which however have been recorded in many other lists. What we need is a coordinated series of bibliographies representing core strata and collection building phases (a la *Elementary School Library Collection*). These "core development bibliographies" would change but slowly, and but little. Around them then would be ranged various secondary and peripheral bibliographies representing specialized areas of interest, dealing with the up-to-date, and the ephemeral, which could be used to develop the unique character of any collection.

There are other problems too. For example, the *New York Times Index*, and *New Serial Titles* appear to have been omitted, and though the *New Catholic Encyclopedia*, and the *Shorter Encyclopedia of Islam* are listed, none of the excellent Jewish encyclopedias could be found, nor any of a number of other similar works. These apparent omissions may be the result of poor indexing. The index, in two parts: author, and subject, generally omits titles, lists a work only once, usually under the "official" entry, and omits cross-references. This may save space but not users' time or tempers (as in a last-ditch effort, Ayer's directory is found under N. W. Ayer . . .—and only there). Strict adherence to LC practice wavers, however, since the *Encyclopedia of Philosophy* is indexed only under Edwards, and the *McGraw-Hill Dictionary of Modern Economics* under Greenwald. Titles should be indexed, and there should be cross-references.

Lastly, despite the claim that the " . . . system for arranging titles within this list was developed pragmatically to provide an arrangement more suited to book selection purposes than the usual library classification schemes . . . " one wonders why? If there is a special benefit, it is not evident to this reviewer, though it is quite evident that the notation used is easily confused with that used by LC in its classification, and actually acts as an impediment to comparison with other lists arranged by more conventional schema.

More highly selective than *BCL*, and more up-to-date in one volume, much expanded over its predecessor, *Books for Junior Colleges*, *BJCL* will be useful to some small junior and community colleges for which it is intended, and to some of the small four-year colleges whose collections have not yet really begun to grow. It may be useful also to some larger high school libraries and possibly to some public libraries. One awaits the day, however, when standard titles will be listed only once or twice in these kinds of lists, and our attention is focused on keeping the rest of it all up-to-date.—*Edmund R. Arnold, Syracuse University.*

Tomorrow's Library: Direct Access and Delivery. By Robert Thayer Jordan. New York: Bowker, 1970. 212p. $10.00.

While home delivery of books is not a new idea in librarianship, there is relatively little literature available. Robert Jordan has provided a service in bringing together a historical accounting of various projects dealing with direct delivery of books. He deals with past and present experiments, with particular emphasis upon mail delivery, and suggests how to implement a regional direct access and delivery service.

However, he concludes that " . . . perhaps librarians are not the ones who should develop and promote a new national system of library home delivery" since he fears that libraries are too stable and conservative institutions to undergo radical change. He says that " . . . public library philosophy today is still affected by the paternalistic, Lady Bountiful attitude" and that it is " . . . unfortunately true that people who work for libraries (and railroads) are often more rude and officious than those who work for airlines and department stores."

Books-by-mail does have appealing points and there have been some successful experiments despite a generally disparaging attitude among most librarians. Mr. Jordan does not give enough information and evaluation to a successful program such as the one in North Central Regional Library in Washington, D.C., and the more modest project in the San Antonio Public Library. A considerable amount of text consists of extensive quotations from correspondence with the author. Author and editor are guilty of poor editing. To quote extensively from correspondence and give a false name in the text and index; to repeat whole paragraphs twice in several instances; to fail to give credit to correspondence in the text or in the index: these failings open questions concerning the validity of the contents.

The book is short, with forty-seven pages devoted to four appendices. "Response to Direct Access and Delivery" (Appendix A) contains testimonials from twelve librarians. Appendix B contains three statements in relation to the "Library Bill of Rights" which deal with access to material. A pilot project for a local and regional demonstration of books-by-mail is presented in Appendix C and readers can see a reprint article about the Jordan Plastic Book Box in Appendix D.

More serious than the editing problem are substantive matters relating to book-by-mail projects. Preferential postage rates are a key factor. His statement that "it does not seem likely that Congress would abolish this modest 'hidden subsidy' to libraries any more than it would abolish the low second-class rates" rings hollow considering pending postal reform legislation. His rating on the efficiency of parcel post delivery is overly generous, at least for certain parts of the country. Many of his figures are dated by five years or more. He claims that "the climate has never been better for innovations" and that the concept of "the free library is as outmoded as the concept that information is scarce." And yet he indicates that a charge per delivery package of over twenty-five cents would "almost certainly cripple the possibility that home delivery would ever serve more than a handful of people."

It is in the author's arguments to convince the reader of the value of the direct access idea that he opens himself to questionable facts and logic. In an uncited quotation, the statement is made that "increasing numbers of walk-in libraries are experiencing losses of 5–10 percent annually." This should be qualified. He claims New York Public Library is the only library intending to develop research library status (what about Cleveland, Philadelphia, Boston, Los Angeles, to name a few?) and that home delivery will free the branch library from a certain amount of questions and routine circulation so that "library systems might begin to staff branch libraries with competent professionals all of the time."

Mr. Jordan's demonstration projects are not inexpensive—a million dollars for one metropolitan area or state or ten million dollars for a first demonstration project confined to one large state or region. A second demonstration project involving one-quarter of the U.S. citizens would cost $100 million.

Despite numerous criticisms that can be leveled at this work, the book provides a focal point for the issue of direct home delivery of library materials.—*John F. Anderson, San Francisco Public Library.*

Libraries and Cultural Change. By Ronald C. Benge. Hamden, Conn.: Archon Books (Shoestring Press), 1970. 278p. $9.00.

"There is," wrote Ruth Benedict in *Patterns of Culture,* "one difficult exercise to which we may accustom ourselves as we

become increasingly culture-conscious. We may train ourselves to pass judgement upon the dominant traits of our own civilization. It is difficult enough for anyone brought up under their power to recognize them. It is still more difficult to discount, upon necessity, our predilection for them. They are as familiar as an old loved homestead. Any world in which they do not appear seems to us cheerless and untenable."

In his introductory chapters Mr. Benge describes a society certainly no less complicated than that of the thirties, but perceptibly changed by the processes of human communication. In them he deals articulately and concisely with the principal doctrines of cultural change, citing such divergent views as those of Eliot, Huxley, Snow, Mills, Marcuse, and Fanon, and then with communication (with due regard for Marshall McLuhan), leisure, literacy, education, censorship, and other social phenomena by which libraries are affected and upon which we hope they have some constructive effect. His concluding chapters deal specifically with libraries' role in a changing society, with the education of librarians, ending with advocacy of a more active and imaginative role for the profession.

Although he assesses, in conventional terms, the functions of libraries (collection, preservation, organization, and dissemination) and some of the particular problems of selection and censorship, individual (as opposed to institutional) responsibilities, status, and the uses of authority, the concluding chapters are rather suggestive than specific in presenting answers to questions posed in the earlier and more general essays.

The questions which he poses, and the manner in which they are presented, however, are highly relevant to the current debate which the American Library Association is having about its own role and the role of the profession. The place of libraries in the general communication of information and ideas, the conception of social responsibility, the role of libraries in the educational process, all must be modified by the rapid changes in the structure of society as a whole. Professor Benge suspects, with reason, that librarians may be somewhat conservative in criticizing cultural traits—particularly in their own institutions—which are (in Benedict's words) familiar as an old loved homestead.

Does he go far enough in suggesting what we should do about it?

Perhaps not. Although there is occasional mention of information science, automation, and some of the other intrusions of technique and technology upon the processes of human communication, these are not only scientific but cultural changes (in both the United States and Great Britain) of considerable magnitude, and Professor Benge touches upon them rather casually.

Although he does deal at some length with the paperback revolution, he might be suspected of underestimating the cultural impact of reprinting and the lesser forms of reprography which, although not conventional parts of the book trade, certainly are having an effect upon it and upon the library as well. Although Professor Benge rationalizes the Two Cultures of C. P. Snow, he gives no acknowledgement of the Technological Society of Jacques Ellul. This may, of course, simply represent a difference in British and American points of view (we must be considerably influenced by the unrelenting persuasion of Xerox and IBM). Nevertheless the theories and techniques of information science constitute the most conspicuous current accultural phenomenon on the library scene, and this is not conspicuously reflected in these essays.

Libraries and Cultural Change is a valuable contribution to library literature. It is concise, readable, and deals with most of the problems which American libraries share with their sister institutions in Britain. If it deals somewhat briefly with some of the current preoccupations of academic librarians in the United States, it makes up for it in the imaginative presentation of a number of provocative ideas.—*David W. Heron, University of Kansas.*

Eighteenth Century Bibliographies. By Francesco Cordasco. Metuchen, N.J.: Scarecrow Press, 1970. 230p. $5.00.

This volume collects under one cover

thirteen previously published lists of references. Three are concerned with the novelist Tobias Smollett (with some repetition), and one each with Edmund Burke, Thomas Frognall Dibdin, Henry Fielding, Edward Gibbon, William Godwin, Samuel Richardson, Laurence Sterne, Edward Young, eighteenth century medicine, and eighteenth century novels. As all the lists were prepared and published separately at least twenty years ago and the editor says: "In this reprinting, I have made no changes," the present volume is a kind of memorial to years gone by. It may have some usefulness while we await the promised second volume of the *New Cambridge Bibliography of English Literature*. Interestingly, comparison of the Dibdin list with that in the already published third volume of *NCBEL* finds Cordasco supplying some valuable references not in the Cambridge volume and showing that it does not do to be condescending towards anyone's labors, especially when it comes to reference bibliography.—*Henry Pettit, University of Colorado.*

Libraries, Readers, and Book Selection. Ed. by Jean Spealman Kujoth. Metuchen, N.J.: Scarecrow Press, 1969. 457p. $10.00.

Book selection is generally acknowledged to play a vital role among the professional responsibilities of the librarian, but until recently there has been surprisingly little written about the subject. The only up-to-date, substantial, monographic treatments that come to mind are Danton's *Book Selection and Collections; a Comparison of German and American University Libraries* (1963) and the Carter and Bonk textbook, *Building Library Collections* (3d ed., 1969).

During the past few years, the subject has begun to receive more attention in the periodical literature of the profession. In *Libraries, Readers and Book Selection*, Jean Kujoth has endeavored to make some of this scattered material more readily available by gathering together forty-four recent journal articles which have some relevance for book selection in libraries. The readings are arranged under the following categories: (1) Professional Reading (i.e., the reading of professionals); (2) Reading Interests and Needs of Special Groups; (3) Communication and Reading Values; (4) The Public Library's Collection; (5) The Academic Library's Collection; (6) Trends, Issues and Influences Affecting Book Selection; and (7) Censorship and Controversial Books.

Most of the articles which appear in the first three sections, comprising more than half the book, are only indirectly concerned with book selection. These sections concentrate on describing characteristics of the diverse clientele which libraries serve and discuss the role of books and reading in contemporary society. Sections four through seven contain articles which deal more directly with the subject. Academic libraries receive very limited coverage. Only four articles are included in section five, and the total length of the section is less than thirty pages.

The organization of *Libraries, Readers and Book Selection* suggests that it is the outgrowth of an introductory library school course in book selection. Its approach is comprehensive; the compiler attempts to provide relevant material for a wide range of potential interests. This unfortunately precludes the possibility of treating any facet of the subject in detail. This deficiency in focus is aggravated by the limitation of having to rely on a variety of previously published articles written by people with dissimilar points of view. The selections are presented without editorial comment, and it sometimes becomes something of a puzzle to determine why an article has been placed where it has, or, in a few cases, why it has been included at all.

Every librarian with an interest in book selection and in the relationships which exist between the library's clienteles and its collections will find something of interest in this book. The articles are usually of high quality, and the diverse topics and approaches may provide new frames of reference for the consideration of old problems. I suspect, however, that there is little in the collection that will be new to the experienced librarian who is a regular read-

er of library literature, and the academic librarian, in particular, will be disappointed in the coverage given his specialty. Small isolated libraries without regular access to the more common library periodicals may find this book worth its substantial purchase price. Academic libraries which support a program of library education will undoubtedly want a copy for their students of librarianship. The large class of libraries which falls outside these categories might do well to invest the money in some more uniquely useful item.

The book includes an index of authors and a brief but adequate subject index. The production and typography characteristic of Scarecrow publications have received enough critical comment elsewhere. It suffices to say that this example exhibits the defects we have learned to expect from that concern.—*Jerold Nelson, University of California, Berkeley.*

ABSTRACTS

The following abstracts are based on those prepared by the Clearinghouse for Library and Information Sciences of the Educational Resources Information Center (ERIC/CLIS), American Society for Information Science, 1140 Connecticut Ave., N.W., Suite 804, Washington, D.C. 20036.

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Documents available from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151 have CFSTI number and price following the citation.

Microfiche 1969—A User Survey. By Harold Wooster. 1969. 20p. (ED 038 984; available from CFSTI as AD 695 049, MF—$0.65 HC—$3.00).

An informal survey of microfiche users was conducted by correspondence, resulting in over 300 letters. Industrial libraries led all others in their acceptance of fiche, with a ratio of two to one in favor. Half of the individual users despised fiche; 25 percent liked it with some reservations and 25 percent were strongly in favor. Half of those who liked fiche had found it useful in handling personal reprint collections, primarily because it saved storage space, but also because it was easy to retrieve and manipulate, and was inexpensive. The chief reason for disliking fiche was the unavailability of readers, either on the job or at home; a close second was the poor optical and mechanical quality of the readers currently available. The author offers three alternative strategies for dealing with microfiche (1) ignore it and it will go away, (2) drive it underground, and (3) learn to live with it until something better comes along. In pursuit of (3) practical suggestions are offered for format of reports to be reproduced on microfiche.

Library Circulation Systems—An Overview. By Cecily J. Surace. 1970. 25p. (ED 039 001, MF—$0.25 HC—$1.35).

The model circulation system outlined is an on-line real time system in which the circulation file is created from the shelf list and the terminal inquiry system includes the capability to query and browse through the bibliographic system and the circulation subsystem together to determine the availability for circulation of specific documents, or documents in a given subject area, or by a certain author, etc. The system is designed independent of the input medium. The user does not have to be present to borrow an item. The model goes beyond the operational limits of most existing circulation systems and can be considered a reflection of the current state of the art. Four types of circulation systems are discussed in order to measure the capabilities of these systems against the model and each other. The four systems are: (1) manual, (2) semiautomated (noncomputer), (3) data collection (batch), and (4) on-line.

A Cost Analysis of Minimum Distance TV Networking for Broadcasting Medical Information. By J. A. Dei Rossi and others. 1970. 84p. (ED 038 988, MF—$0.50 HC—$4.30).

Two specific applications for networks might be used to serve the biomedical community: (1) networking of the nation's educational television (ETV) stations for occasional or one-time broadcasting and (2) networking of the nation's medical schools for continuous broadcasting. These two applications are analyzed in detail. A second contribution of this analysis is the provision of data and methodology for examining costs and effectiveness (in terms of physicians and students within broadcasting range) of configurations of subsets of points in the full network. The data and methodology could also be used for determining the minimum cost for networks using media other than broadband television broadcasting, such as audio only broadcasting in conjunction with slides or still pictures. The cost attractiveness of networked, simultaneous broadcasting can also be compared with, for example, sequential broadcasting using mailed video tapes.

A MARC Bibliography: A Guide to the Literature on LC/Machine Readable Cataloging. By Barbara Herrgesell, comp. 1970. 18p. (ED 038 994, MF—$0.25 HC—$1.00).

A comprehensive, unannotated listing of important English language materials about, or related to, Machine-Readable Cataloging (MARC), from the King report up to October 1969. Citations of a few materials published later have been added because of their considerable and primary interest. News notes which are repetitive and of little value when the primary document is in hand have been excluded. The United States, Canada, and the United Kingdom are the geographic limits. Citation sources included: (1) "Library Literature," (2) "Annual Review of Information Science and Technology," (3) "The Information Bulletin," (4) "Bibliography of Library Automation," and (5) miscellaneous bibliographies owned by the Library Education Experimental Project (LEEP).

Library Information System Time-Sharing (LISTS) Project. Final Report. By Donald V. Black. 1970. 216p. (ED 039 009, MF—$1.00 HC—$10.90).

The Library Information System Time-Sharing (LISTS) experiment was based on three innovations in data processing technology: (1) the advent of computer time-sharing on third-generation machines, (2) the development of general-purpose file-management software, and (3) the introduction of large, library-oriented data bases. The main body of the report contains: (1) purpose, (2) background and development of LISTS, (3) conduct of the LISTS experiment, (4) problems encountered, (5) results, and (6) conclusions. The five appendices cover: (1) on-line circulation simulation, (2) LISTS system users manual, (3) LISTS system users manual for circulation control subsystem at Fullerton Jun-

ior College Library, (4) instructions for operating an on-line circulation system, and (5) LISTS evaluation questionnaire. Based on this experiment, it appears that automation is an improvement over manual processing in some parts of the acquisitions process, for bibliographic searching of the Machine-Readable Cataloging (MARC) records, for circulation control and for production of bookform catalogs. One of the most important results of this experiment was the understanding gained by the participants of what automation can offer for library applications.

System Scope for Library Automation and Generalized Information Storage and Retrieval at Stanford University. By Glee Cady and others. 1970. 152p. (ED 038 153, MF—$0.75 HC—$7.70).

The scope of a manual-automated system serving the forty libraries and the teaching and research community of Stanford University is defined. Also defined are the library operations to be supported and the bibliographic information storage and retrieval capabilities to be provided in the system. Two major projects have been working jointly on library automation and information retrieval since 1968. One is the Bibliographic Automation of Large Library Operations on a Time-sharing System (BALLOTS) funded by the Office of Education and the other is the Stanford Physics Information Retrieval System (SPIRES), funded by the National Science Foundation. The creation of a production system for library automation (BALLOTS II) and generalized information storage and retrieval (SPIRES II) requires the continuation of a comprehensive system development process. This process has six phases: (1) preliminary analysis, (2) detailed analysis, (3) general design, (4) detailed design. (5) implementation, and (6) installation. The document represents the main output of the preliminary analysis phase encompassing the definition of goals, description of the user environment, analysis of the existing system, selection of the system scope, and establishment of gross technical feasibility of the selected first implementation scope. Included is a twenty-page glossary of information science terminology.

Library Service for Commuting Students: A Preliminary Study of Problems in Four Southeastern New York Counties. Studies in Interlibrary Relations, Number One. By Matilda A. Gocek. Poughkeepsie, N.Y.: Southeastern New York Library Resources Council, 1970. 28p. (ED 037 228, MF—$0.25 HC—$1.50).

This study of commuting student use of public libraries was confined to certain key public libraries in the New York counties of Orange, Rockland, Sullivan and a section of Ulster. The purpose of this preliminary enquiry was to determine: (1) what students use public library services, how often and what materials are sought, (2) the attitudes of student users of public libraries vs. attitudes towards their academic libraries, (3) the degree of hardship imposed upon local public libraries by student demands, (4) how well the public library fills student demands, and (5) the possibility of further study into the relationship of the public library to the educational system as structured by the New York State Education Department. Study data were collected through: a review of literature pertaining to library services to commuting students, interviews with public library directors in key areas and with a random selection of commuting students, and visits to small public libraries. This enquiry showed that the library uses of the college student are a matter of community concern because responsibility cannot be successfully consigned to the college at which he is matriculated, and that more consideration of this neglected problem is needed. Specific recommendations are made for additional studies and surveys.

Books for Developing Countries: A Guide for Enlisting Private-Industry Assistance. Washington, D.C.: Agency for International Development, 1969. 50p. (ED 037 227, MF—$0.25 HC—$2.60).

The U.S. Government has recognized that literacy, education, and the availabil-

ity of books are essential for the development of a nation's human and institutional resources. This policy stresses the importance of encouraging book publishing capability in developing countries, and this pamphlet is designed to stimulate the interest of both Americans and leaders in the developing countries by indicating how publishing can be strengthened. The pamphlet specifically guides: (1) officers of the Agency for International Development and other U.S. Government agencies in ways to involve the private sector of American book publishing in implementing the national book policy overseas; (2) the U.S. publishing industry by encouraging increased interest in working with publishers in the less developed world and by helping the U.S. industry to assess opportunities to become involved; and (3) governments and publishers in the developing countries by describing the range of considerations the U.S. Government has in mind as it approaches overseas book problems and the ways in which American publishers might be able to help overcome them. Appendixes list countries in which AID is currently operating and countries or areas with investment guaranty programs.

Development of a Computer-Based Laboratory for Library Science Students Using LC/MARC Tapes. Final Report. By Pauline Atherton. Washington, D.C.: Office of Education (DHEW), Bureau of Research, 1970. 51p. (ED 037 224, MF—$0.25 HC—$2.65).

The Library Education Experimental Project (LEEP) involved the establishment of a computer-based laboratory for library science students, utilizing the Library of Congress MARC (Machine-Readable Cataloging) magnetic tapes. Assignments in several classes (reference and bibliography, cataloging, and technical services) involved the use of these tapes and special purpose programs at the Syracuse University Computing Center. With the aid of these computer programs, over two hundred students in eight different courses (repeated for three semesters) were able to search and retrieve catalog records for current literature, to process their own cataloging assignments or examine the characteristics of the Library of Congress cataloging. The laboratory's usefulness was evaluated by the students and the faculty at the end of each semester. The entire laboratory (computer program, data bases, class assignments, user manuals, etc.) has been fully described to other library schools at a special institute and via a newsletter and report series. Appended are the results of a survey of program languages and computing facilities available to library schools and a bibliography of LEEP publications. ■■

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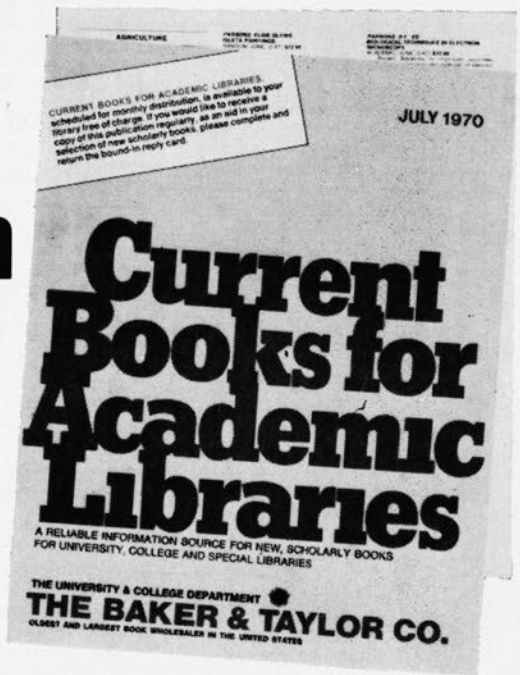

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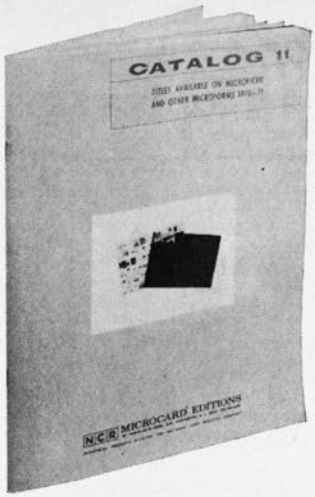

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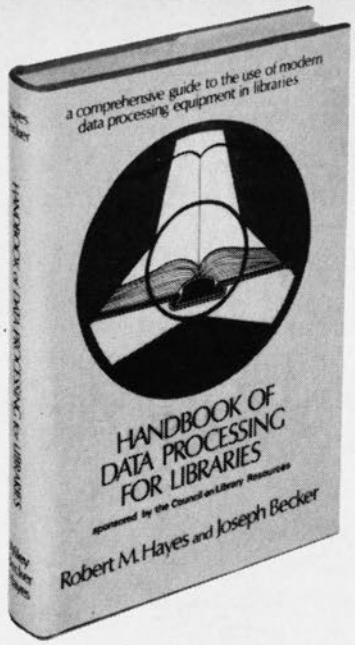

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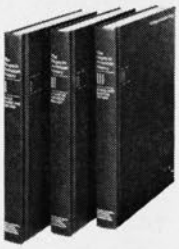

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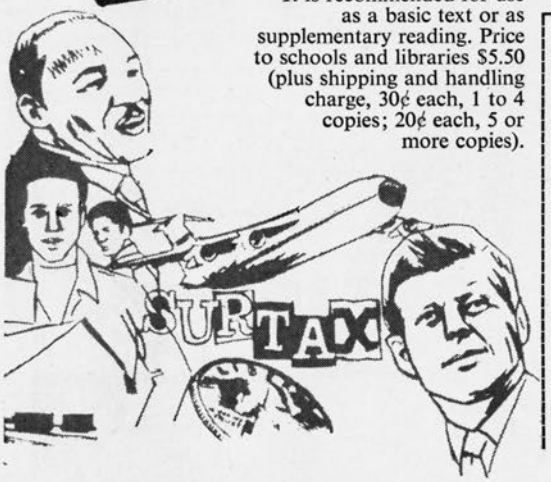

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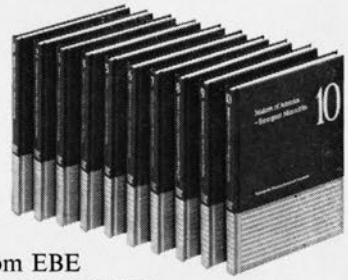

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